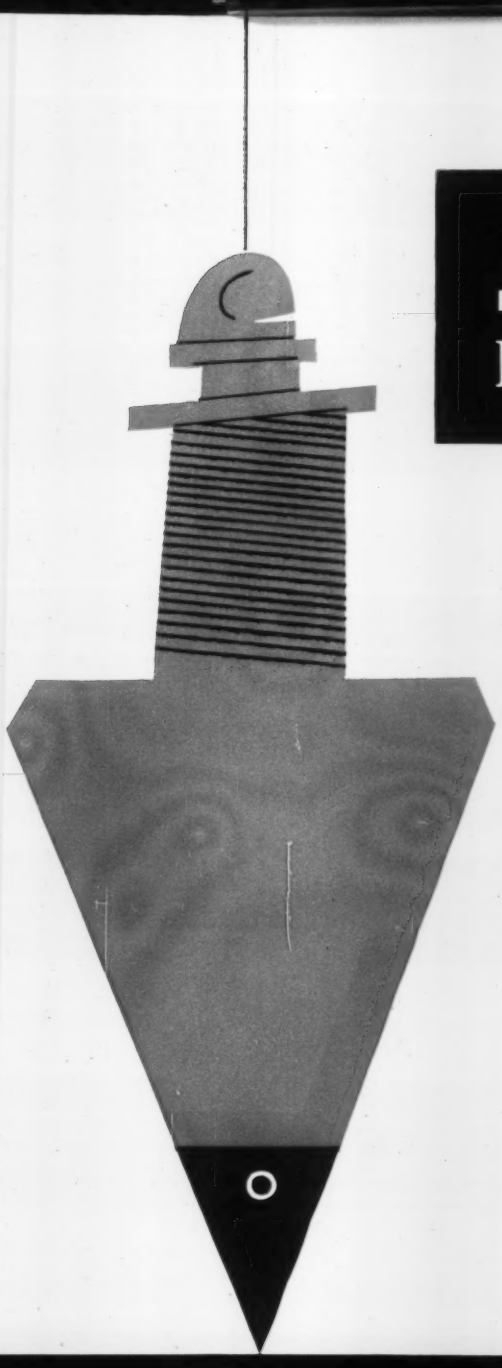
AUGUST 18, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION



A PROGRAM FOR MANAGEMENT
1958 . . . No. 7

Surveying the Market

Research can help you plumb your markets in a competitive economy. For how to do it . . Page 85

- **Shotblast Tips for Sheet Users . . . . Page 98**
- **Construction Bolsters Steel . . . . Page 131**

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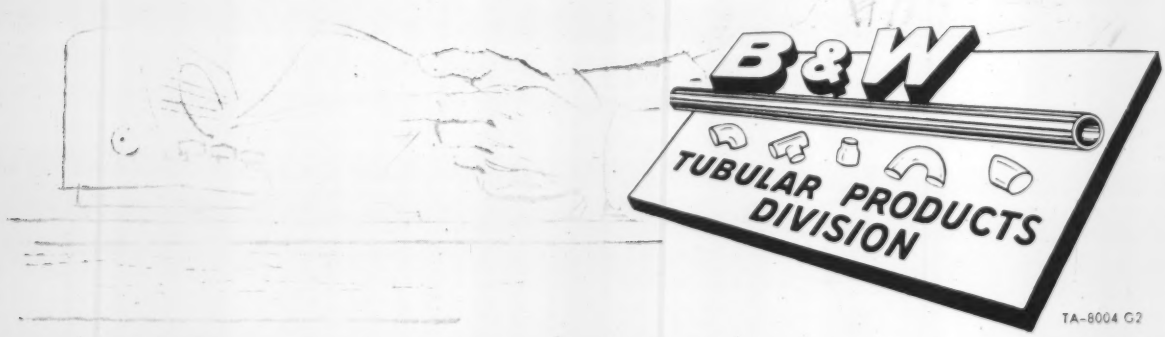
"B&W Tubing helps me control costs...

I'm a front office man. Keeping costs in line is my main job. I know that B&W Tubing helps us build our products more economically by saving time and materials, minimizing rejects and fabricating problems."

Whatever your tubing job, B&W can save you money by tailoring physical and mechanical characteristics to suit your manufacturing methods exactly.

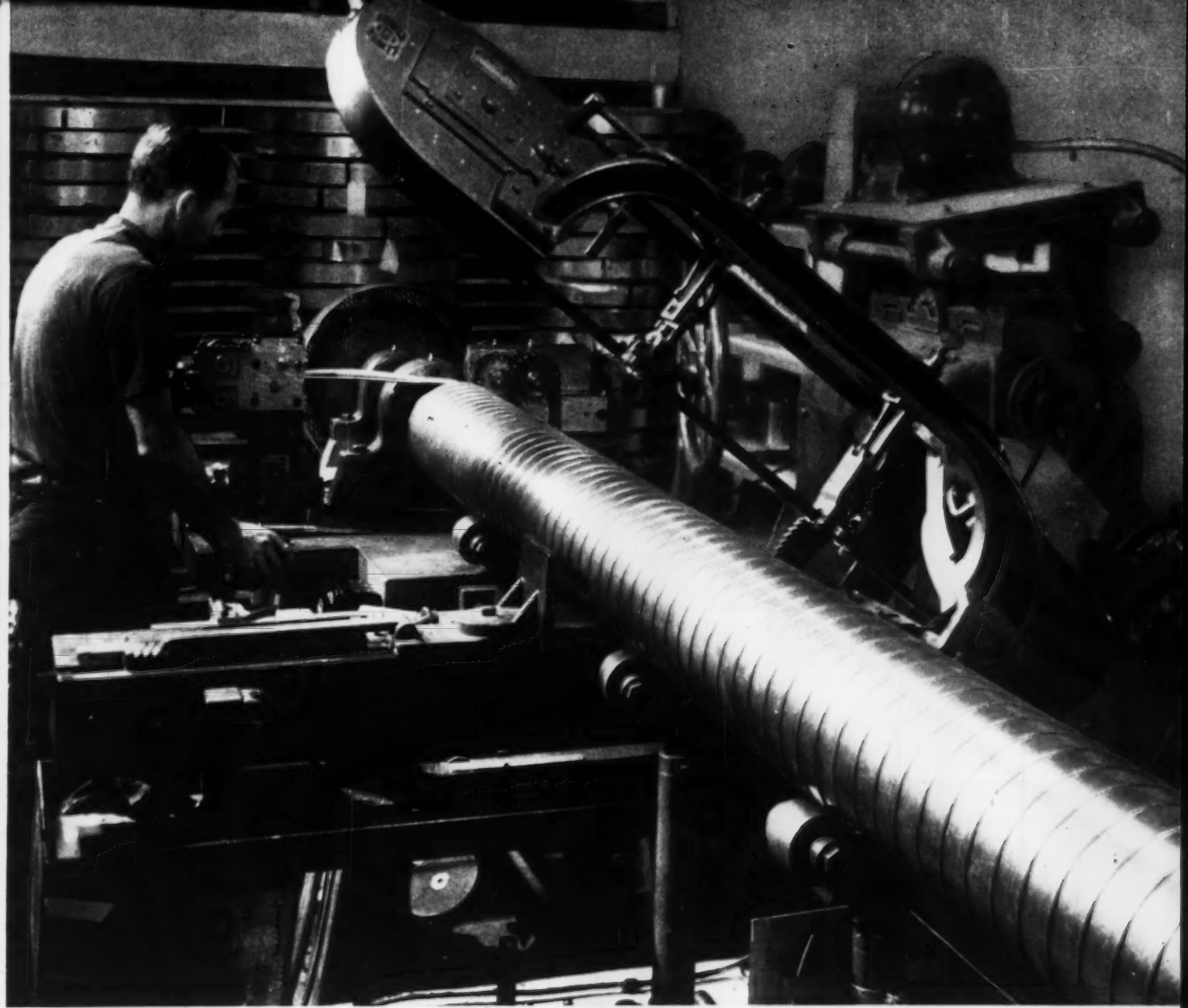
And B&W offers you a wide range of stainless, alloy and carbon steel tubing, in almost any size, shape or finish. What's more, delivery is fast, on schedule, in any quantity you need.

If you'd like to cut costs, and speed production, let B&W help you choose the best tubing for your special requirements. Get in touch with Mr. Tubes through your nearest B&W Representative or independent distributor. He maintains warehouse stock in principal cities or write for Bulletin TB-347. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



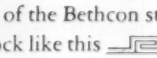
TA-8004 G2

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals.



Spiral conduit wound from coiled galvanized sheet

Here's tubing that is neither rolled to shape nor drawn to size nor welded together. It's spirally wound from a continuous ribbon of Bethcon galvanized sheet steel!

One of our important customers uses an ingenious method to turn out this strong yet light-weight duct. Each convolution of the Bethcon strip is seamed to the preceding one with a lock like this  thus forming a reinforcing rib on the outside of the tubing. This exterior four-ply rib makes the conduit rigid, and permits a smooth interior. A 10-ft length in the 5-in. size weighs but 20 lb—a real advantage in the shipping, handling and installing of the conduit. Because Bethcon sheet is coated in Bethlehem's *continuous* galvanizing process, it will take deep draws and severe forming without damage to its sparkling zinc coating. This tight zinc coating is a major reason for Bethcon's increasing use as a means of improving products and output.

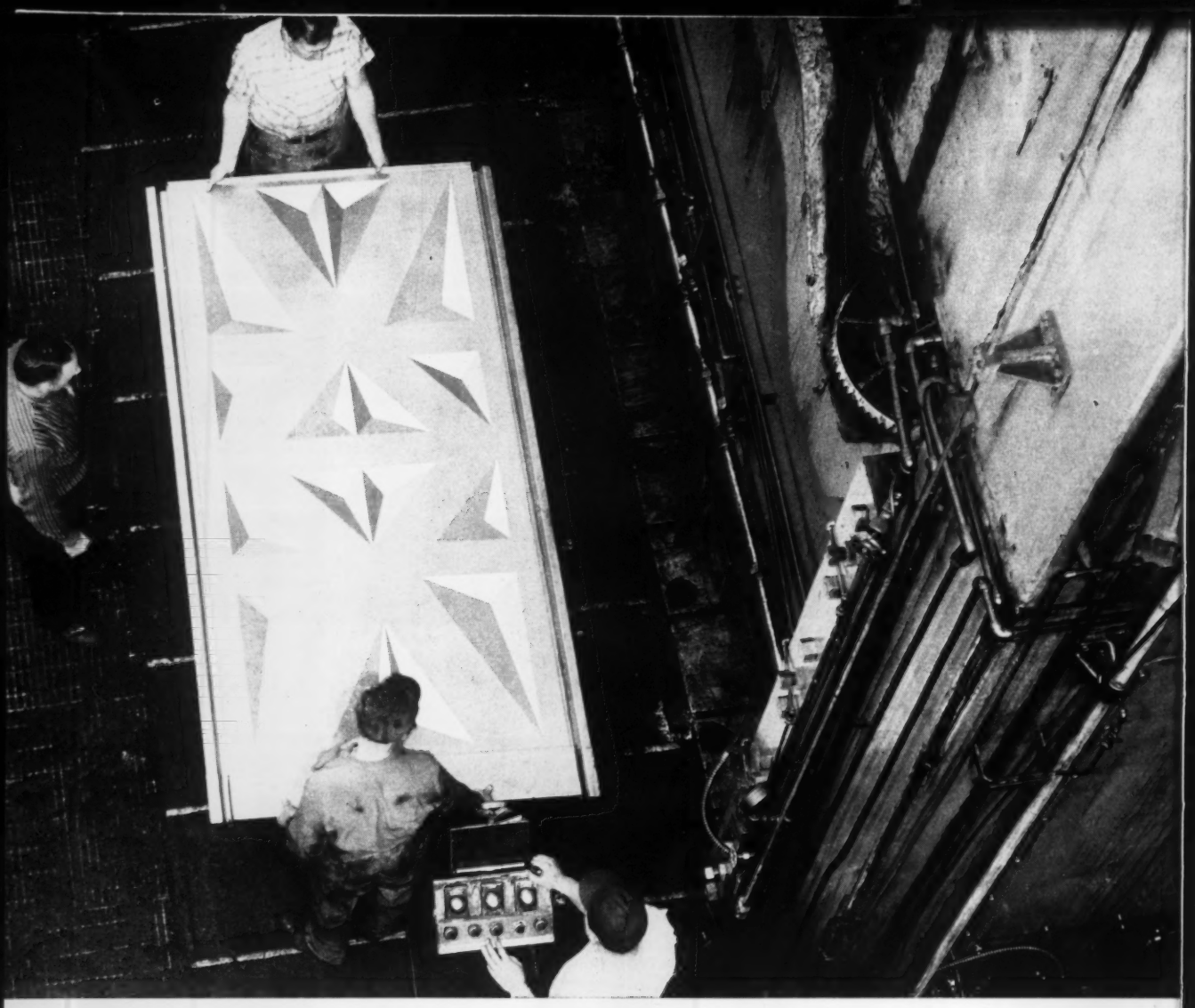
Whether you work with galvanized or uncoated sheets, Bethlehem can meet your requirements with sheets of finest quality. Sheets as finely finished, as easy forming, as true to gage as any on the market! We invite your inquiry.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



Here's where the big jobs get into shape

It takes a big press to stamp out a panel like this 4½ x 9 foot section of stainless steel curtain wall for a building exterior.

COMMERCIAL can and has accurately stamped thousands of curtain wall panels—aluminum, stainless steel, bronze, or steel, with any type of finish—for recently completed modern skyscrapers like the Socony-Mobil Building in New York City, the H. K. Porter Building in Pittsburgh, the Commercial Credit Building in Baltimore, and the Morton Salt Building in Chicago, among others.

Here's a full-time working combination—30 years of skill and experience in forming metals, specialized equipment which includes modern "more-hits-per-hour" 100-ton to 2000-ton presses, and integrated facilities for designing and producing tools and dies—which makes the "tough" stamping jobs routine.

COMMERCIAL produces medium to large custom stampings involving sheets starting at 20 gauge or plates up to ¾-inch thick, diameters from 6 inches to 84 inches, and rectangular shapes 6 inches to 7 feet in width and 6 inches to 15 feet in length. And, it maintains accurate dimensions, preserves original finishes, and keeps unit costs down.

We'd like to prove it to you the very next time you're in the market for a medium to large custom stamping. Our engineers will be glad to work closely with you to help solve your stamping problem. Write to Commercial Shearing & Stamping Co., Dept. L-34, Youngstown 1, Ohio.

Specialists in the shape of things to come
CUSTOM STAMPING • UPSET FORGING • ROTOFORMING

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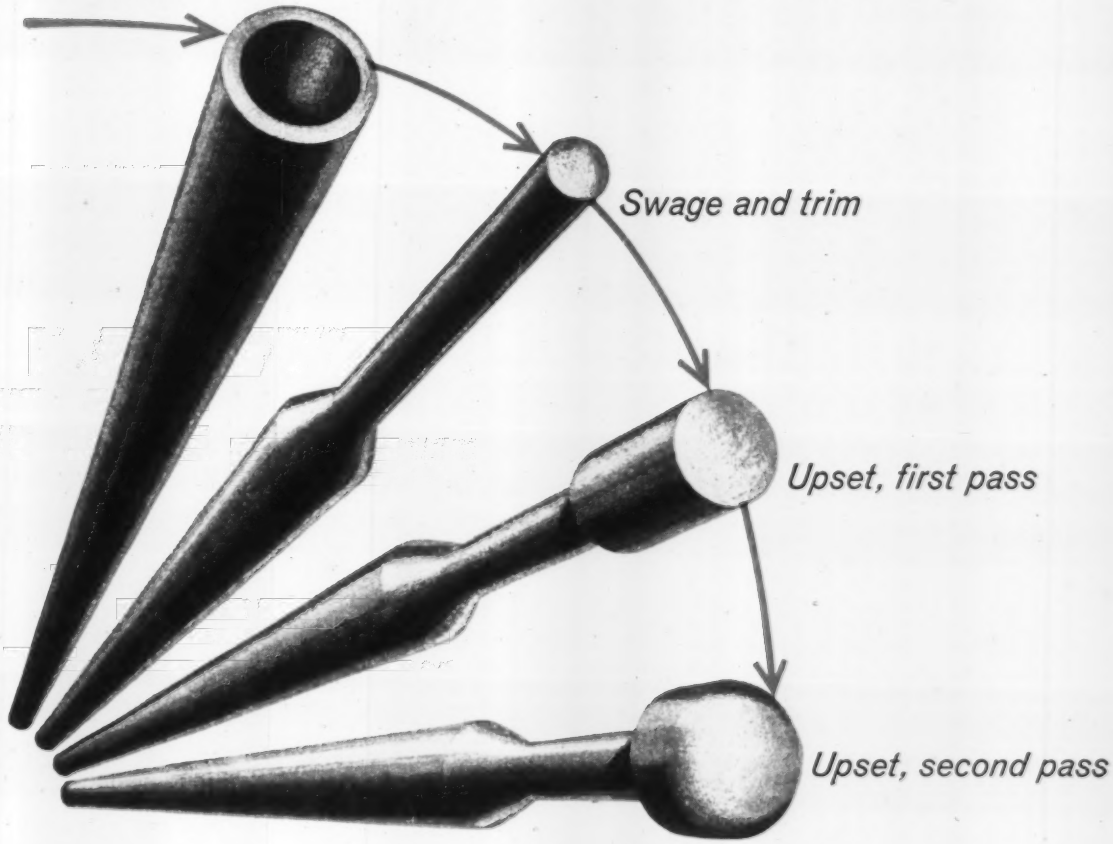
Start with OSTUCO TUBING



and end up with a 34% *saving*

Here's a cost-cutting case history right in the Ohio Seamless mill. It proves we take our own medicine—*and like it.* You may, too.

Formerly, mandrels for rolling Ostuco Tubing on our Assel mill were made from two pieces. A shaped end, hogged out of solid bar stock, was welded to a long tube. Expensive to machine, weld and process.

We decided to *forge the mandrels entirely from Ostuco Seamless Steel Tubing.* In three steps—swage, upset and finish-form—we now produce better mandrels . . . ready for use without any machining whatsoever, *and save 34% over former processing methods.*

Chances are good that Ostuco Tubing is the right prescription for slashing your production costs, too. For expert advice, contact our nearest sales office or our plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-7225

SALES OFFICES: Birmingham • Charlotte • Chicago (Oak Park) • Cleveland Dayton • Denver • Detroit (Ferndale) • Houston • Los Angeles (Lynwood) Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh Richmond • Rochester • St. Louis • St. Paul • St. Petersburg • Salt Lake City Seattle • Tulsa • Wichita

CANADA: Railway & Power Engr. Corp., Ltd.

EXPORT: Copperweld Steel International Company
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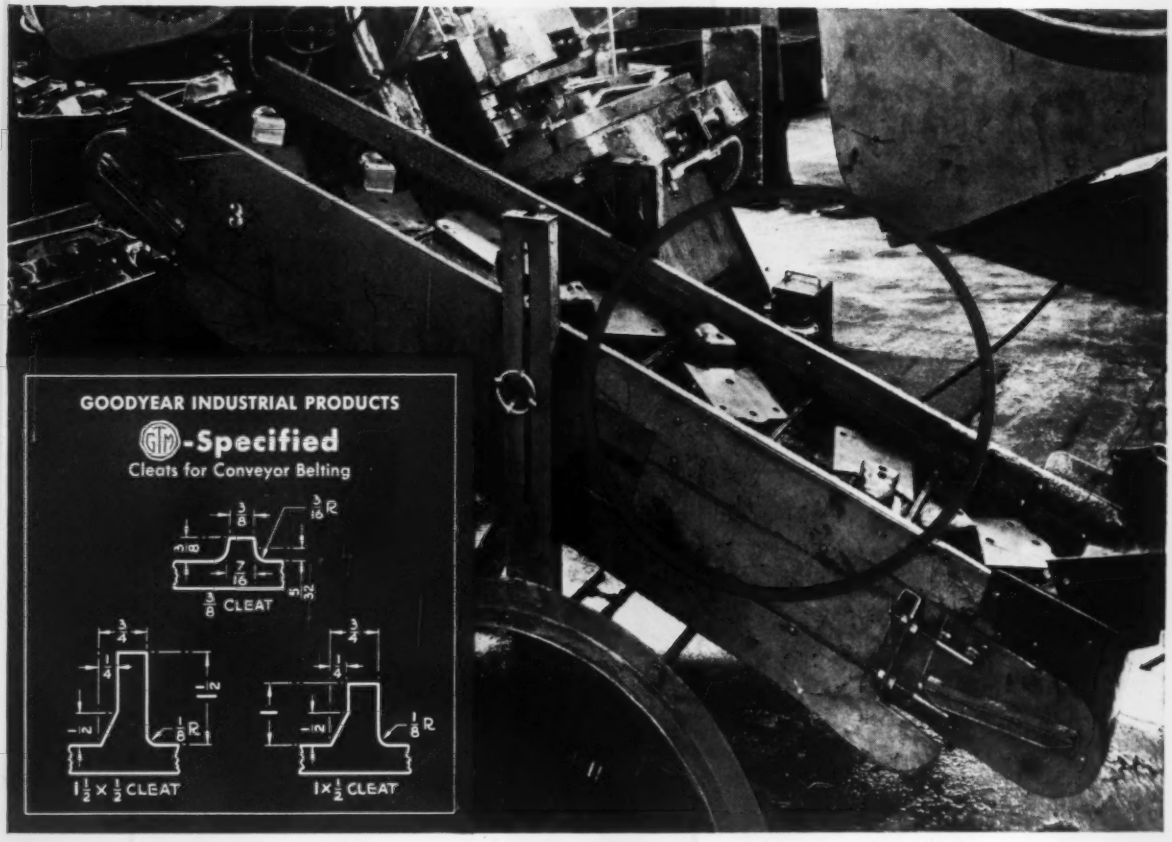
of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging



They're raising production—and lowering costs by ⅓

Portable conveyors—between production lines on different levels—were a "must" at this Midwestern automotive parts plant. But the specially constructed belts they used soon cut and flaked off. They became oil-soaked and accumulated dust—dirtying the parts. Worse still, they stretched—had to be taken up every 6 weeks. Even then, none lasted more than a year.

Then the G.T.M.—Goodyear Technical Man—recommended Style ORS Cleated Belts. They're made of rubber especially compounded for extreme resistance to oil, cutting and abrasion. And the tough, firm-gripping cleats are molded right into the rubber for durability.

The savings are impressive: The G.T.M.'s less-expensive belts eliminated the need for parts washing. And after 3 straight years of full service—*three times the life of competitive belts*—they're still going strong.

Like to have savings like these on your production lines? The fastest way to find out is to call the G.T.M. He'll be Johnny-on-the-spot if you contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

CONVEYOR BELTING BY

GOODYEAR

60 GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

This Week in STEEL Metalworking Weekly

August 18, 1958
Vol. 143 No. 7

EDITORIAL 43

If you aren't doing market research, we think you should. You may be selling buggy whips and don't know it.

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Surveying the Market—In a dynamic economy, shifts in markets come rapidly. You must change marketing practices if you want your company to survive or even maintain its competitive position in the industry. This article is No. 7 in STEEL's 1958 Program for Management series.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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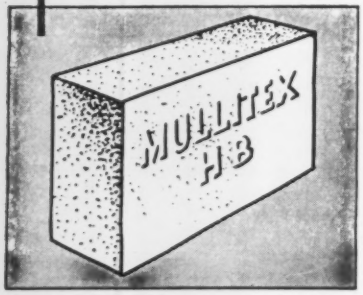
Walsh Points the Way...
TOWARD A NEW HORIZON in REFRACTORY Performance

AN OPEN LETTER TO THE STEEL INDUSTRY

...consistent with refractory quality, Walsh is constantly striving to produce fire brick of higher bulk density and lower porosity. To you this is assurance of greater dollar value when you purchase refractories by Walsh.

Specialists in fire brick of high bulk density and low porosity.



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behind the scenes

Heavy Text

Because all men are related, in spite of discrepancies in hormones, space, and time, we don't mind claiming kinship with a young gentleman who wrote a love letter about 20,000 years ago. This distant relative, archaeologists tell us, had holed up in the Pyrenees. With a belly full of reindeer meat and a soul full of love, he scratched a message on a cave wall suggesting that there was absolutely nothing like a dame. The rock on which these forthright hieroglyphics appeared was a substantial part of a mountain range, so we submit that the copy had considerable weight.

Perhaps it was a mean trick to drag in an old relative to offset Associate Editor Robert Jaynes's statement that he had worked with about 36 lb of copy to produce STEEL's Program for Management article, "Surveying the Market" (Page 85). Well, maybe it was a natural reflex when Robert informed us that he had weighed his research material on the bathroom scales, and tried to shock us with the information thus gained.

As soon as we got away from the comparative weights of editorial material, Mr. Jaynes sailed into a description of his market survey. "I attended an American Management Association meeting in Chicago, and a marketing meeting at Harvard, and I took so many notes I ran out of paper."

Fortunately, Robert has a phenomenal memory. "Before I forget," he concluded, "be sure to mention that the photograph on the cover came to us through the courtesy of Production Service Co., Cleveland, distributors of metalworking equipment."

Scientific Marketing

Nineteen fifty-eight has been tagged the year of the marketeer. Editors of STEEL have paid much attention to this concept, particularly in their Program for Management series. No. 6 (July 14) considered what customers would buy. The theme of that article was that marketing is more than selling; it must precede production, rather than follow it. It must find out what is wanted, measure the demand, plan the product, and move it to the consumer.

This week's article points out that, with capacity exceeding demand, it becomes more important to know what the market is, and to gear production to known needs.

Pass the Word, Jack

Neither Thomas Jefferson nor George Washington could spell worth a hoot, so we didn't feel embarrassed one day recently when we found occasion to look up the correct spelling of the word echinodermata. The little girl next door said that's what starfishes were, and she had just returned from Bar Harbor, Maine, where a lot of echinodermata live, and if we couldn't spell it we were, ipso facto, a dummy.

Well, of course, we couldn't spell it; five will get you ten that George Washington couldn't have spelled it, either. However, on looking it up, we came across the word echopathy, which rhymes with the remark made by the New Jersey Quaker when he learned that his son had become a policeman, "A coppa, thee?" Echopathy means a morbid condition in which one repeats words automatically without any consideration as to meaning or application, and if the word itself is not too well known, the condition surely is.

Last week, STEEL's Washington editor, Jack Botzum, slipped us a splendid example of echopathy. It was a mimeographed letter he had received containing something over 5000 words, typed clear to the margins and even running off the bottoms of the pages. It began with a complaint about long distance telephone service, but the writer got off the ground in the second paragraph and then went into orbit.

Jack explained that he received one of these missives every two months, and because he retains an open mind on flying saucers, he is beginning to wonder if the letters are in code and if his office has been selected as a center of espionage. Relax, Jackson. Thanks to a starfish, we found a word that diagnoses your correspondent: He is an echopath!

McFee Figures Fee

Voltaire Q. McFee owned a pet store, stocked with pets for Charlie Adams' cartoon characters: Such as tarantulas, pythons, crocodiles, kraits, and vultures. He insured his $20,000 stock for three-fifths of its value at a rate of 24 cents per $100. He also insured his $25,000 building for four-fifths of its value at a rate of 28 cents per $100. Plucking a feather from one of his vultures, he made it into a quill, dipped it into one of his overfed vampires, and figured his total premium for two years.

"That's not so bad," he murmured to himself. "I can sell a fine mess of electric eels for that exact amount, and settle the bill at once!"

How much did Voltaire (you will pardon the expression) charge for his electric eels?

Shrdlu

(Metalworking Outlook—Page 39)

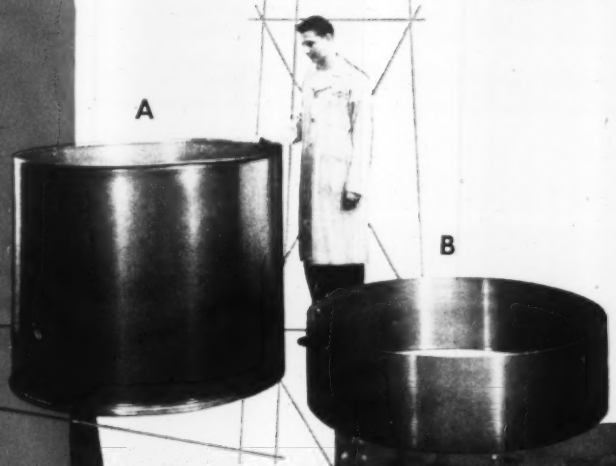
Hydrospinning makes

BIG NEWS

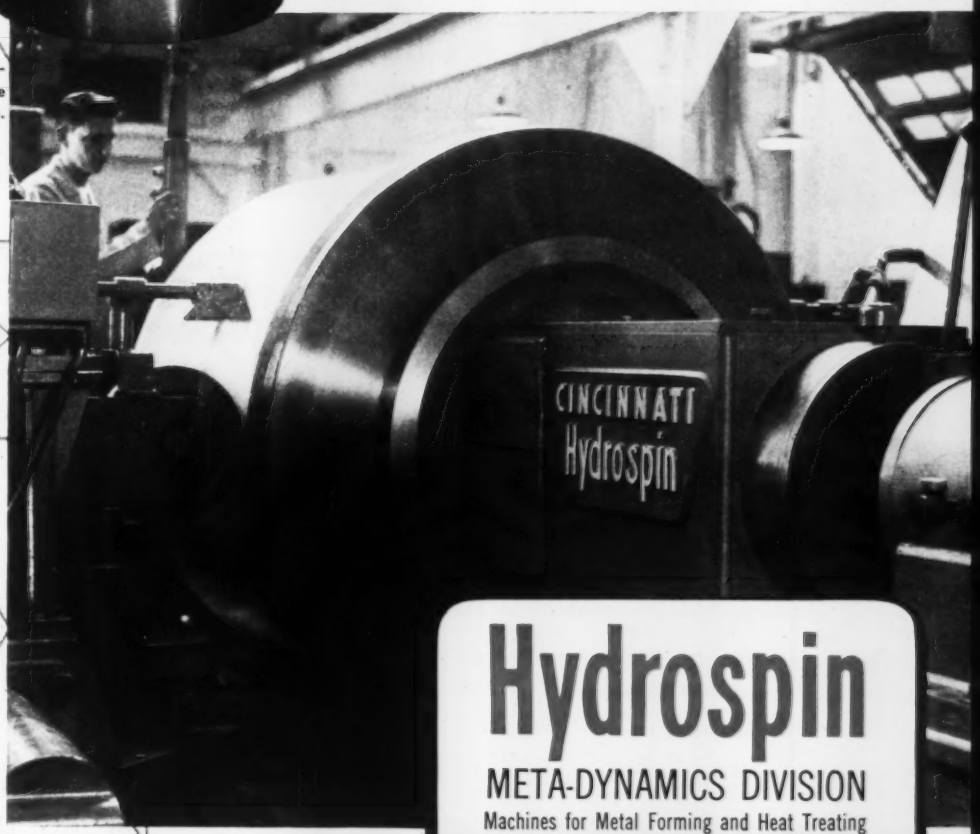
For Producing Guided Missile Hardware

"*Chipless Machining*" by the Cincinnati Hydrospin® offers an unsurpassed method for producing lighter, stronger, guided missile hardware at tremendous savings in materials and production time. Many types of exotic, high tensile strength alloys—ferrous and non-ferrous—which reduce weight, can be used. With low-cost tooling, parts are quickly produced to accurate dimensions . . . have fine finish . . . with increased strength, hardness and fatigue resistance.

Development work that has been conducted indicates that parts up to 98″ diameter, and larger, can be successfully Hydrospun. For full details, call in a Meta-Dynamics Division field engineer.



Part (A) is spun from preform (B)—using this double roller Cincinnati Hydrospin.



Hydrospin

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Machines for Metal Forming and Heat Treating

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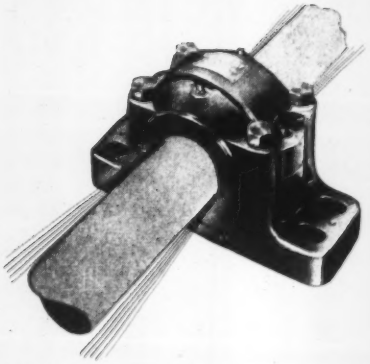
LINK-BELT "Mill Bearings" compensate for shaft deflections in extra-severe applications

With cast steel housings plus *self-alignment*, Link-Belt "Mill Bearings" are a perfect match for the grind and grime of heavy loads in steel mills, mines, foundries and similar grueling service. They instantly adjust to shaft misalignment . . . accommodate minor inaccuracies of welded and concrete support structures . . . end need for extra-heavy shafting to avoid deflections which ruin ordinary bearings.

Link-Belt "Mill Bearings" are part of industry's most complete line of self-aligning ball and roller bearing blocks. You can get full information from any of 40 Link-Belt offices or your authorized stock-carrying distributor.

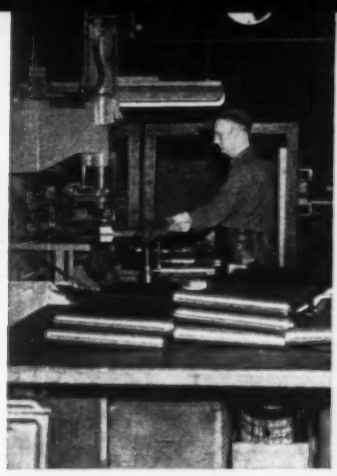
LINK-BELT

MANUFACTURERS OF SELF-ALIGNING BALL AND ROLLER BEARINGS



Spherical bearing is free to align in any direction, assuring full load capacity regardless of shaft deflection.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 14,506



This operator
is seam welding heat exchanger sections formed from Youngstown Copperoid Drawing Sheets at American Furnace's Red Bud, Ill. plant.

Accent on excellence

Youngstown cold-rolled sheets

HEATING AFCO SINCE 1900 Comfortmaker® COOLING

This modern young homemaker demands a year-round heating and air conditioning system that will permit her home to radiate with comfort—and she'll get it with her new AFCO Base-Blo produced by American Furnace Company of St. Louis, Missouri.

These beautifully styled and highly efficient heaters incorporate Youngstown Cold-Rolled Sheets as housing members. Also, Youngstown's Copperoid Drawing Sheets are used to fabricate heat exchanger units because of their excellent non-corrosive qualities. As a result—long, trouble-free performance is guaranteed all American Furnace customers throughout the world.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

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Manufacturers of Carbon, Alloy and Yoloy Steel
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...custom built

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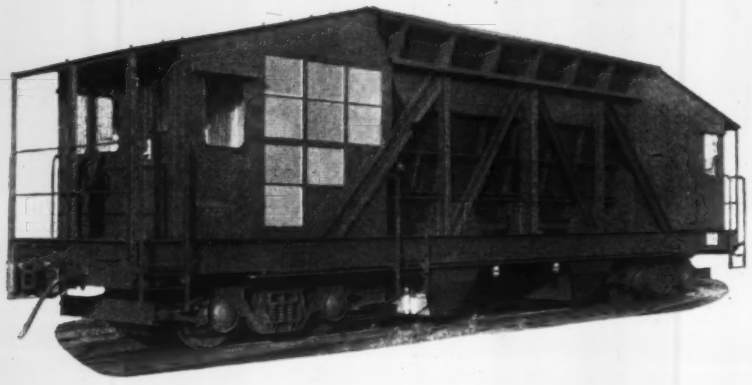

75-ton diesel-electric transfer, single hopper, bottom dump with air-operated discharge gates and double-end control.

Atlas builds steel plant cars to fit the exacting needs of each user. And each is constructed with the simplicity and ruggedness that defies obsolescence.

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LETTERS
TO THE EDITORS

Packaging Story to Sales Force

You offer an extra copy of the article, "Industry Takes New Look at Packaging," on Page 72 of your July 14 issue. We need more than one copy, so we request your permission to reproduce 50 copies for our field sales force.

Glenn H. Stephenson
Manager, Sales Promotion
Stanley Steel Strapping
Division of the Stanley Works
New Britain, Conn.

• *Permission granted.*

Request for Russian Steel Data

The article, "Steelmen Tour Russia" (June 16, Page 48), came to my attention recently. Please send me the STEEL Goes to Russia series.

Y. Matsunaga
Technical Superintendent
Nippon Yakin Kogyo Co. Ltd.
Tokyo, Japan

Series Helps Reader

Please put me on your Program for Management mailing list. I have had the opportunity of reading a few of your management articles, and I feel they can be a great help to me in my work.

John Williams
Training Assistant
Northern Illinois Gas Co.
Bellwood, Ill.

Looking for Right Atmosphere

We were interested in the article, "Pick the Right Atmosphere To Sinter Iron" (July 28, Page 80). This is the first time, to our knowledge, that anyone took the time to explain the difference in cost and effect of the various types of sintering atmospheres. We would appreciate 30 reprints.

M. T. Victor
President
International Powder Metallurgy Co.
Ridgway, Pa.

Disagrees with Article

If reprints of your article, "Warm Heading Tackles Tough Metals" (July 21, Page 114), are available, please forward 15 copies. We have been doing some work in this field, and some of the data published in your article are a little confus-

(Please turn to Page 12)

Fort Pitt Steel Casting Div. cuts cleaning costs with giant 72 ft. Pangborn ROTOBLAST®

AT FORT PITT . . .
Fort Pitt Steel Casting Division, Pittsburgh Steel Foundry Corporation, McKeesport, Pa., uses the 72 cu. ft. Pangborn Rotoblast Barrel to apply the economies of barrel-type cleaning to large-size castings. This machine Rotoblasts *70 to 80 tons of castings a day.*

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The Pangborn Engineer in your area will be glad to take off his coat and go to work on *your* cleaning problem at no obligation. For full details on Rotoblast Barrels, write to: PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Md.
Manufacturers of Blast Cleaning & Dust Control Equipment.

Pangborn Rotoblast Barrels are available in 1½, 3, 6, 12, 18, 20, 32, 72 and 102 cubic foot sizes.

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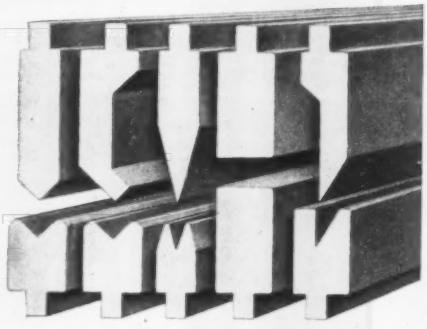

CHICAGO®
Induction Hardened*
PRESS BRAKE DIES

This organization of local distributors offers immediate delivery on many CHICAGO *induction hardened* press brake dies. These stock dies are economical, and the quick delivery saves time in tooling. They are available in any length from 4 to 12 feet in increments of 2 feet.

Stock dies are used for a surprisingly large variety of bending operations. And, with CHICAGO *induction hardened* dies you get bonus performance and increased die life at no extra cost. Remember, these dies can be used in any make or size of standard press brake.

On your needs for press brake dies, call your nearest distributor listed here. With Bulletin D-457 you can order by number. Ask for a copy.

*Induction hardening is a special, high-frequency process used to harden the wear surfaces of CHICAGO dies. Field reports on CHICAGO *induction hardened* dies show up to ten times longer life than conventional press brake dies.

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Press Brakes, Press Brake Dies
Straight-Side-Type Presses

Hand and Power Bending Brakes
Special Metal-Forming Machines

DREIS & KRUMP
MANUFACTURING CO.
7458 South Loomis Boulevard
Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

ing. It does not bear out the indications we have had from our results.

Peter A. Hassell
Assistant Sales Manager
Magnethermic Corp.
Youngstown

• *With the art of warm heading still in somewhat a primitive state, there is disagreement about some of its fundamentals. We hope to include Magnethermic's work in a future article.*

• • •

We are extremely interested in this article. Please send four copies.

Paul M. Steiert
Mosow Screw Co.
Waukegan, Ill.

18 Ways To Cut Costs

We read with interest your good article, "18 Often Ignored Ways To Cut Costs" (July 21, Page 74), and would appreciate 15 copies.

Marion G. Reisner
Adams Co.
Dubuque, Iowa

Treasurer Requests Reprint

I would appreciate a copy of your Program for Management article, "Finding Out What Customers Will Buy" (July 14, Page 101).

C. H. Kraft
Treasurer
United States Steel Supply
Division of United States Steel Corp.
Chicago

• • •

It will be greatly appreciated if you would forward me four copies.

R. E. Bremer
Executive Vice President
Ohio Injector Co.
Wadsworth, Ohio

• • •

Please send me two copies.

Roy B. Johnston
Advertising Manager
National Steel Corp.
Pittsburgh

Engineer Lauds Article

I would appreciate a reprint of the article, "Electrical Steels: How To Choose and Improve Them" (June 9, Page 116). It is well-written and informative.

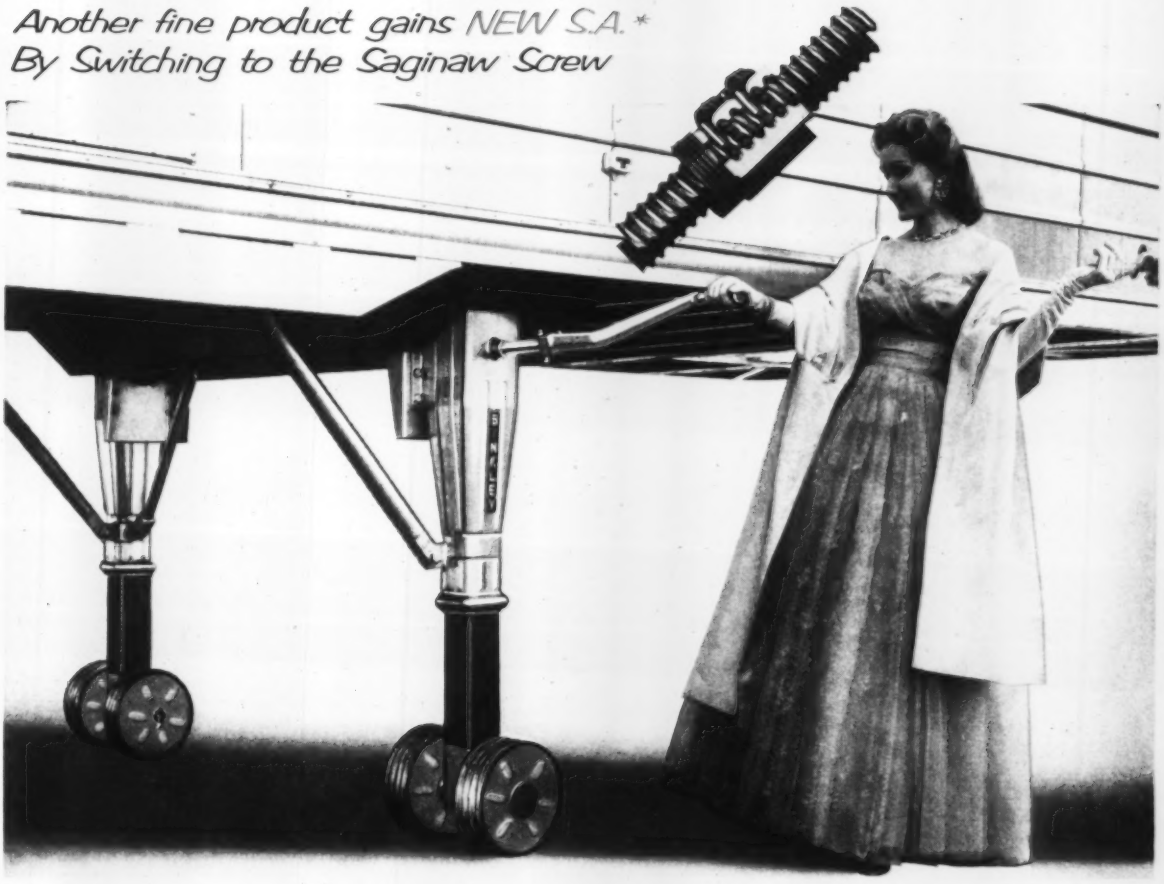
J. E. Heck
Senior Research Engineer
Research Laboratories
Armco Steel Corp.
Middletown, Ohio

Copies to Apprentice Committee

We would appreciate six copies of your article, "More Apprentice Programs Needed" (July 7, Page 46). They will be distributed to members of the apprentice committee and key men in management.

Lloyd Kidwell
Chairman, Joint Apprenticeship Committee
Nelson Electric Mfg. Co.
Tulsa, Okla.

*Another fine product gains NEW S.A.**
By Switching to the Saginaw Screw



WORLD'S MOST EFFICIENT ACTUATOR OPERATES TRAILER LANDING GEAR WITH 5 TURNS PER INCH INSTEAD OF 20

It's "happy landings" for truckers from now on—since Binkley Manufacturing Company has developed and marketed a new truck trailer landing gear which can be raised with 75% less cranking. They gave their product this new ***S**ales **A**ppeal by switching from a high-friction acme screw to the almost frictionless Saginaw Screw.

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with over 90% efficiency is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give your products that vital new **S**ales **A**ppeal you're looking for right now. To find out, write, wire or telephone Saginaw ball/bearing Screw Operation, Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*

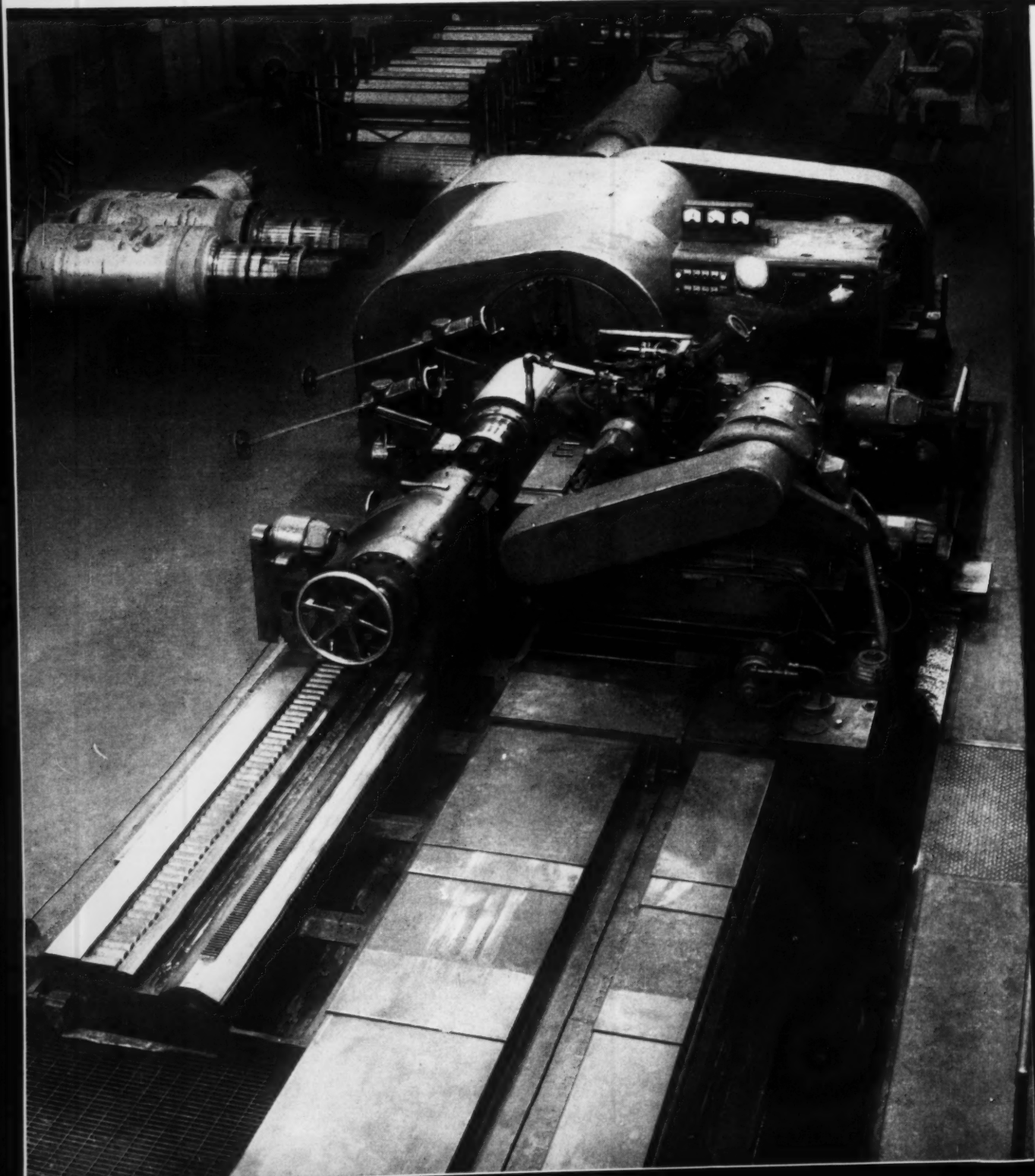
**Give your products NEW SALES APPEAL... switch to the*

Saginaw ball bearing Screw

Outstanding features of Landis roll grinders

. . . assure accurate contours,

A Landis 50" x 192" Type 30 Roll Grinder in operation at a large steel mill.



speed operations and reduce costs

mirror finishes and short set-up time

Fine finishes assured by

Microsphere wheel spindle bearings
All vee belt work drive
Heavy cast bed
Rigidized grinding wheel spindle

Accurate straight or shaped rolls assured by

Landis crowning and concaving mechanism
Precision grinding wheel feed
Heavy duty adjustable roll heads

Short setup time assured by

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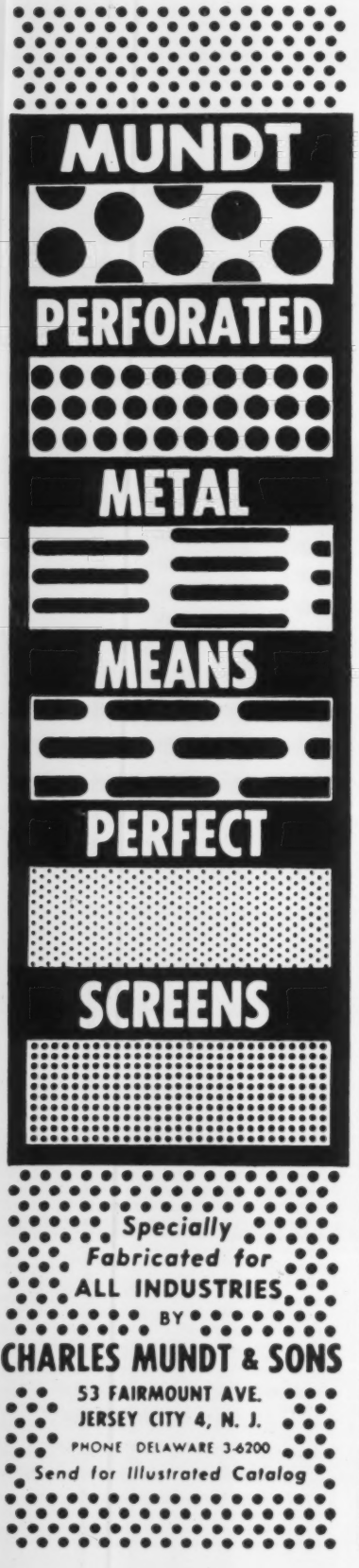
Variable speed carriage traverse
Power movement of grinding wheel head
Ample power to start heavy rolls

Reflection on roll demonstrates mirror finish grinding done on Landis Type 30 Roll Grinders.

LANDIS
precision grinders

LANDIS TOOL COMPANY / WAYNESBORO, PENNSYLVANIA



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ALLOY Useful Temperature Range	TENSILE DATA Yield (psi) Elongation (%) Temperature	TENSILE DATA Tensile (psi) Reduction of Area (%) Temperature	RUPTURE DATA (100 Hrs.) Stress (psi) Elongation (%) Temperature	METHOD OF MELTING
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GREEK ASCOLOY† Up to 1000°F	135,000 17% 70°F	155,000 56% 70°F	42,000 35% 1050°F	AIR ARC
16-25-6 Up to 1300°F	71,000 33% 70°F	129,000 54% 70°F	42,000 12%+ 1200°F	AIR ARC
A-286 Up to 1350°F	98,000 22% 70°F	150,000 42% 70°F	62,500 7% 1200°F	AIR ARC STERCON
STERVAC 3000 (M-308) Up to 1350°F	121,000 14% 1200°F	134,000 20%+ 1200°F	65,000 — 1300°F	STERCON STERVAC
STERVAC 1000 (Waspaloy**) Up to 1500°F	—	—	36,000 14% 1500°F	STERCON STERVAC
STERVAC 2000 (M-252) Up to 1500°F	98,000 20% 70°F	170,000 22% 70°F	34,000 — 1500°F	STERVAC
STERVAC 5000 (Udimet 500***) Up to 1600°F	— 8%+ 1200°F	175,000+ 10%+ 1200°F	25,000 30%+ 1650°F	STERVAC
STERVAC 4000 (Rene 41*) Up to 1650°F	110,000+ 8%+ 1400°F	120,000+ 12%+ 1400°F	25,000 25%+ 1650°F	STERVAC
UNKNOWN	TO MEET YOUR REQUIREMENTS			

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Charted above are high temperature alloys produced by Firth Sterling metallurgy to meet today's specifications in the aircraft and missile industry. There are, no doubt, applications for these which do not yet exist—just as there are applications for which no satisfactory materials have been developed. We'd like to know *your needs*—and apply our experience to your problems.

For over 68 years, Firth Sterling metallurgists have pioneered the development of tougher, more heat-resistant metals. Their experience in all three melting methods: air arc, consumable electrode (STERCON) and induction vacuum (STERVAC) is exceptional. And this important technological "know how" is being applied to newer metals such as Zirconium.

If your requirements involve the engineered performance of alloys at higher and higher temperatures, our background in this field could prove helpful. Please let us hear from you. Firth Sterling, Inc., Dept. 81H 3113 Forbes St., Pittsburgh 30, Pa. Offices and warehouses in principal cities.

Trade Mark *General Electric Co. · **Pratt & Whitney Div., United Aircraft Corp. · ***Utica Drop Forge & Tool Div., Kelsey Hayes Co.
†Allegheny Ludlum Steel Corp.

"Your Future is Great in a Growing America"

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Correctly milled plated to requirements
"Funnel Shape" permits easier starting of threads.
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Eliminate one work operation every time a nut-and-lock-washer is installed—and get the positive assurance of always having perfectly mated nuts and washers. No lock washers to put on—just start the nut, take up, and tighten. And Eaton Keps start quicker, easier, too — because the "funnel shape" literally guides the threads of the nut onto the bolt. The serrated washer spins freely, for perfect take up and tightening. Ideally suited for hopper feeding and automated assembly operations. In addition, Eaton Keps give you uniformity piece-after-piece, and unfailing dependable quality. Whether yours is a simple hand application or a complex machine installation—you will do the job better, easier and faster at lower cost with Eaton Keps every time you put on a nut.

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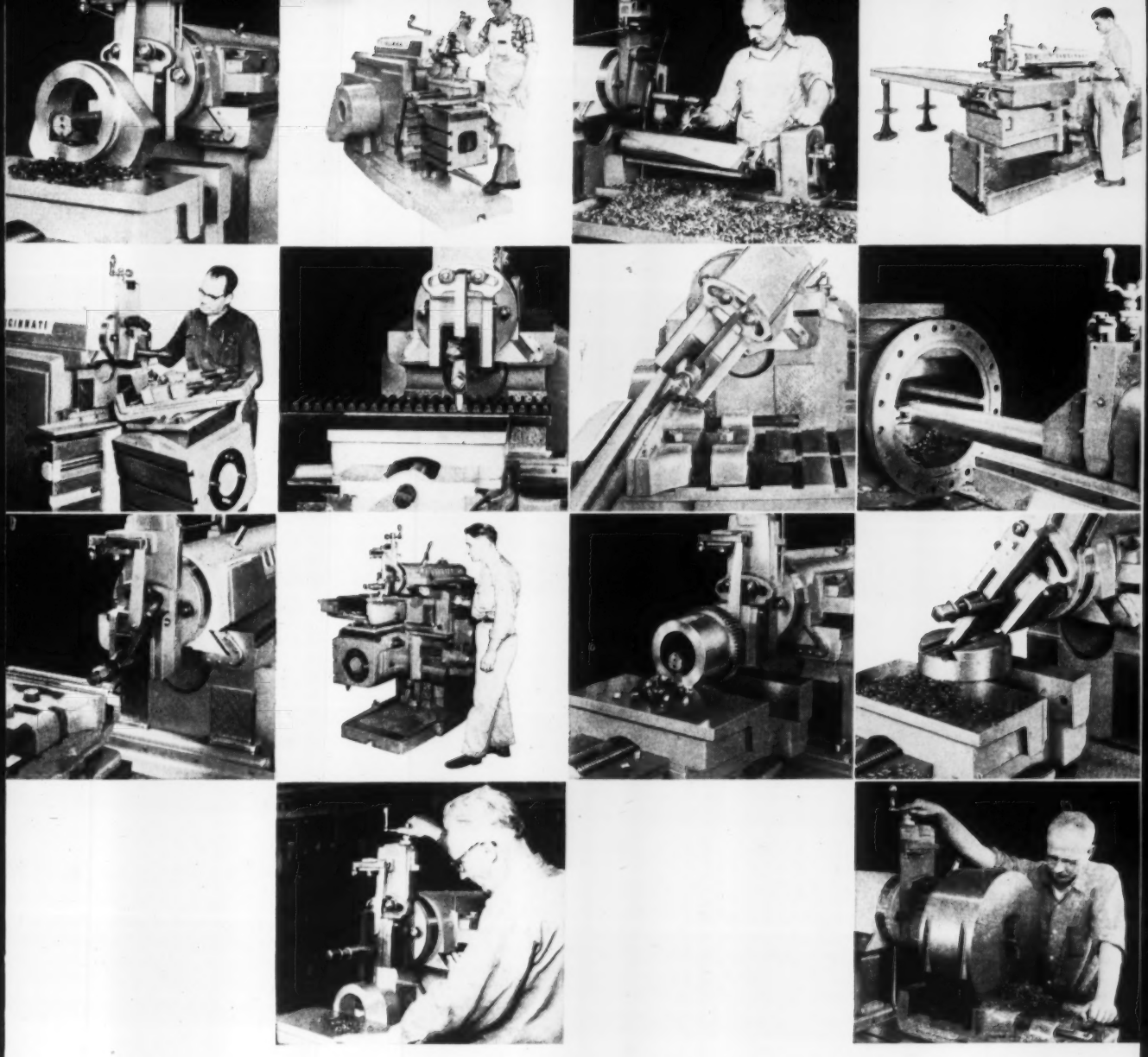

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In the tool shop or in your high production bay, the wide-ranging versatility of a Cincinnati Rigid Shaper gives you maximum productivity for your invested dollar. And for each of the many jobs you can do on it, a Cincinnati Rigid Shaper produces something extra – in metal cut per hour, in accuracy, in ease of operation. See for yourself why a new Cincinnati Shaper would pay off for you: write Dept. C, for Catalog N-7, just off the press.

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REPUBLIC STEEL WIRE
Helps Sell Sleeping Comfort

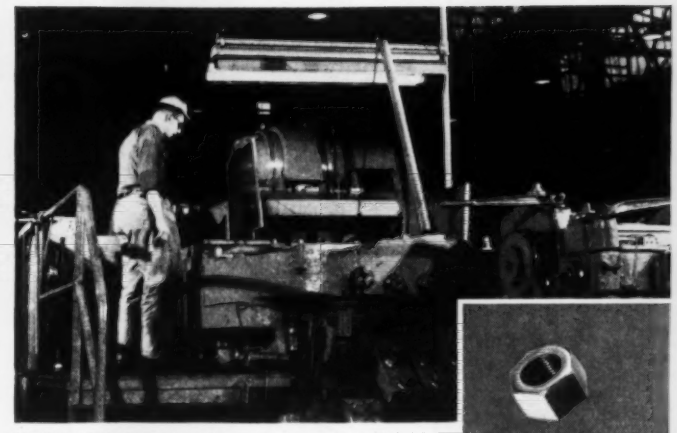
The Englander Company, Inc., employs a new concept in construction of innerspring mattresses and Tension-Ease foundation units. Helical type springs, formed from Republic Spring Wire, are anchored at the center to thin strips of steel. This permits each spring to compress independently of the others, resulting in even distribution of weights and pressures, and providing the ultimate in sleeping comfort.

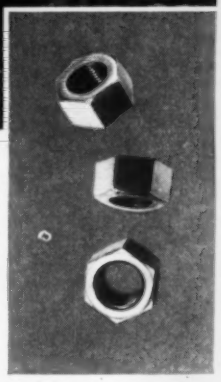
"A good night's sleep is half the battle"—and it's doubtful if any businessman will argue with that statement. With this in mind, The Englander Company, Inc., one of the nation's largest manufacturers of box springs and innerspring mattresses, goes all-out to guarantee the finest in sleeping comfort.

Republic Spring Wire plays an important part in the popular reputation Englander has built in both the regular and deluxe Tension-Ease units. Englander forms Republic Spring Wire into cone-type springs for the box springs, and into Bonnell, or hourglass helical type springs, for the mattresses. These two types yield correctly and comfortably to body contour.

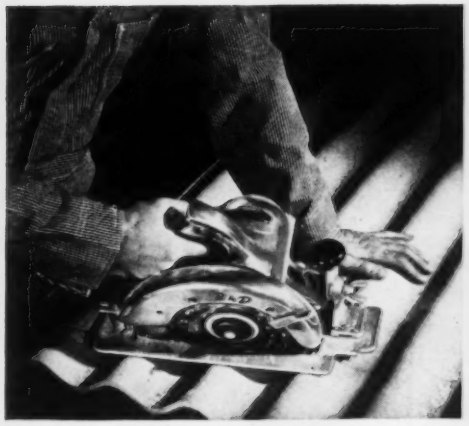
Republic's experienced wire metallurgists know that spring wire, or any wire, is not sold off the shelf. They investigate the desired end use—the problems of quality, yet low-cost, quantity production—then suggest a specification to do the job.

Possibly you can sleep better in the future, too, if your product is fabricated from Republic Wire. Republic Wire Metallurgists are ready to assist you in selection, application, and processing. The coupon is your invitation to use their services. Mail it today.

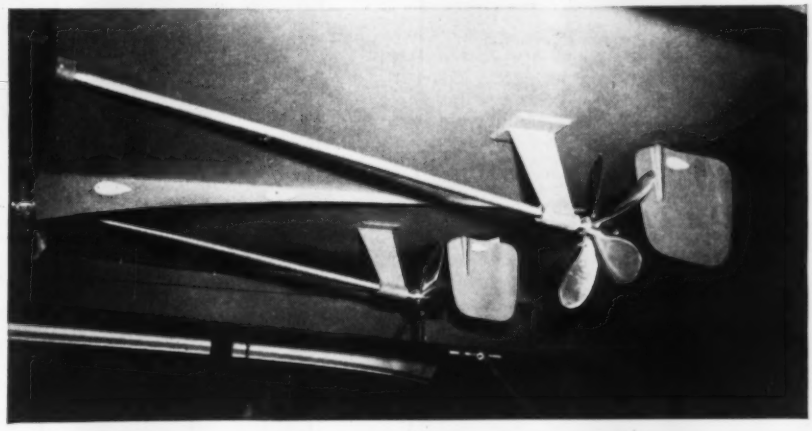




THERE IS COMFORT in knowing that when you specify Republic Fasteners, you can count on consistent uniformity from one unit to the next, year in and year out. You get unswerving quality and dependability in each fastener, in any quantity. Skilled workmen, using modern production equipment like the nut former shown above, maintain uniform quality in each type of fastener. Your Republic Bolt and Nut Division representative or distributor will be glad to work with you to make sure you get exactly the right fastener to suit your application. Send coupon for full information on types and sizes.



RELIABILITY AND HEAVY-DUTY PERFORMANCE help sell portable electric tools and help build a first-class product reputation for The Black & Decker Manufacturing Company, Towson, Maryland. Maintaining this reputation requires constant vigilance in quality control of both methods and materials. Republic Cold Finished Alloy Steels have met every requirement for vital gear train components. The strength and toughness of these steels gives Black & Decker gears the ability to shrug off repeated shock and heavy loading—and come back for more. Check on the many advantages that Republic Cold Finished Alloy Steels can offer your product. Call your local Republic office or mail the coupon.



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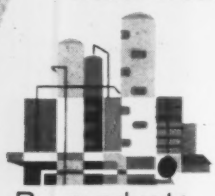
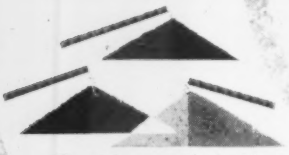


By-products plants



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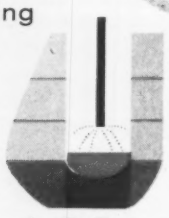
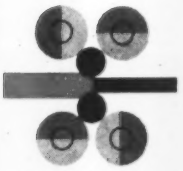


L-D Process plants

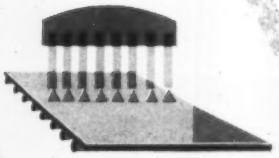
Blast furnaces

Pipe mills

Open hearths



Rolling mills



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OF MEETINGS

Aug. 19-22, Western Electronic Show & Convention: Pan-Pacific Auditorium, Los Angeles. Information: WESCON, 1435 S. LaCienega Blvd., Los Angeles 35, Calif.

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 11-12, Refractories Institute: Fall meeting, Broadmoor Hotel, Colorado Springs, Colo. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 15-17, American Rocket Society: Fall meeting, Hotel Statler-Hilton, Detroit. Society's address: 500 Fifth Ave., New York 36, N. Y. Secretary: A. C. Slade.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-18, American Supply & Machinery Manufacturers' Association Inc: Industrial distribution forum, Hotel Statler-Hilton, Cleveland. Association's address: 2130 Keith Bldg., Cleveland 15, Ohio. Manager: W. B. Thomas.

Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Sept. 19, Malleable Founders Society: Fall semiannual meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

Sept. 22-23, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

LOOK WHAT HAPPENS

when you

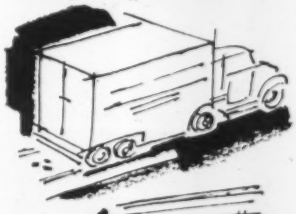
Call Cambridge

for

INDUSTRIAL WIRE CLOTH AND SCREEN

Bulk or Fabricated Parts

INQUIRIES ARE ANSWERED PROMPTLY—Whenever you call or write for information on prices, availabilities or service, you get a prompt reply.



DELIVERIES ARE MADE ON TIME—Orders for the most frequently used types of wire cloth are promptly filled. If we can't supply what you want from our complete stock, we'll schedule our looms to get it to you as soon as possible.

INSTALLATIONS ARE CHECKED—At Cambridge, orders aren't filled and forgotten. Our own sales engineers follow up your order to make sure our product is giving you the best possible service.

QUALITY, OF COURSE—Individual loom operation and countless checks on mesh size and mesh count assure you of highest quality wire cloth when you specify Cambridge.

Let us quote on your bulk or fabricated wire cloth needs. Samples for inspection or test purposes are available upon request. Call your Cambridge FIELD ENGINEER. He's listed in the phone book under "Wire Cloth." Or, write direct for FREE 94-PAGE CATALOG and stock list giving full range of wire cloth available. Describes fabrication facilities and gives useful metallurgical data.

The Cambridge Wire Cloth Co.

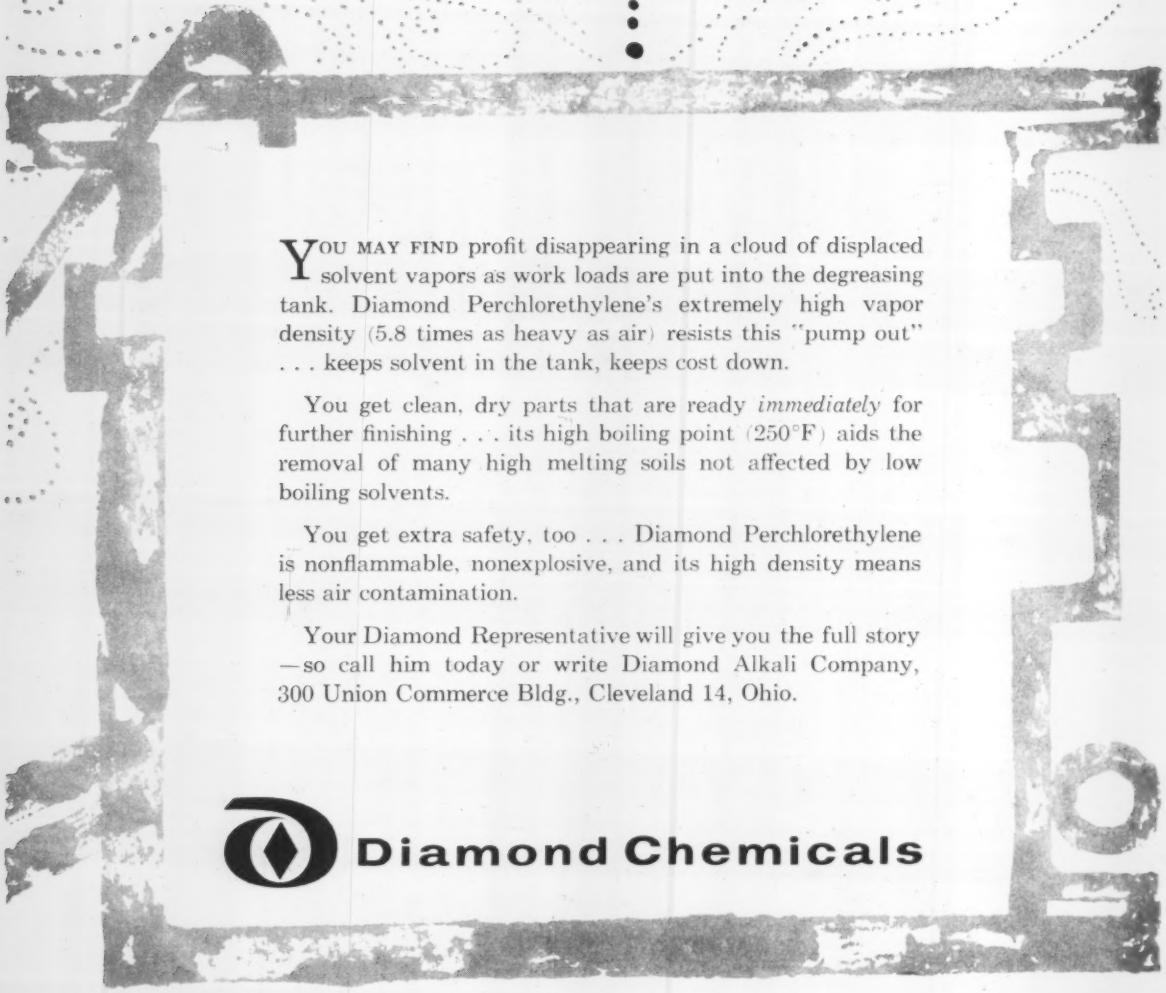
WIRE CLOTH | METAL-MESH CONVEYOR BELTS | WIRE CLOTH FABRICATIONS

Department J, Cambridge 8, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

is your degreasing solvent suffering from

PROFIT "PUMP OUT"?



YOU MAY FIND profit disappearing in a cloud of displaced solvent vapors as work loads are put into the degreasing tank. Diamond Perchlorethylene's extremely high vapor density (5.8 times as heavy as air) resists this "pump out" . . . keeps solvent in the tank, keeps cost down.

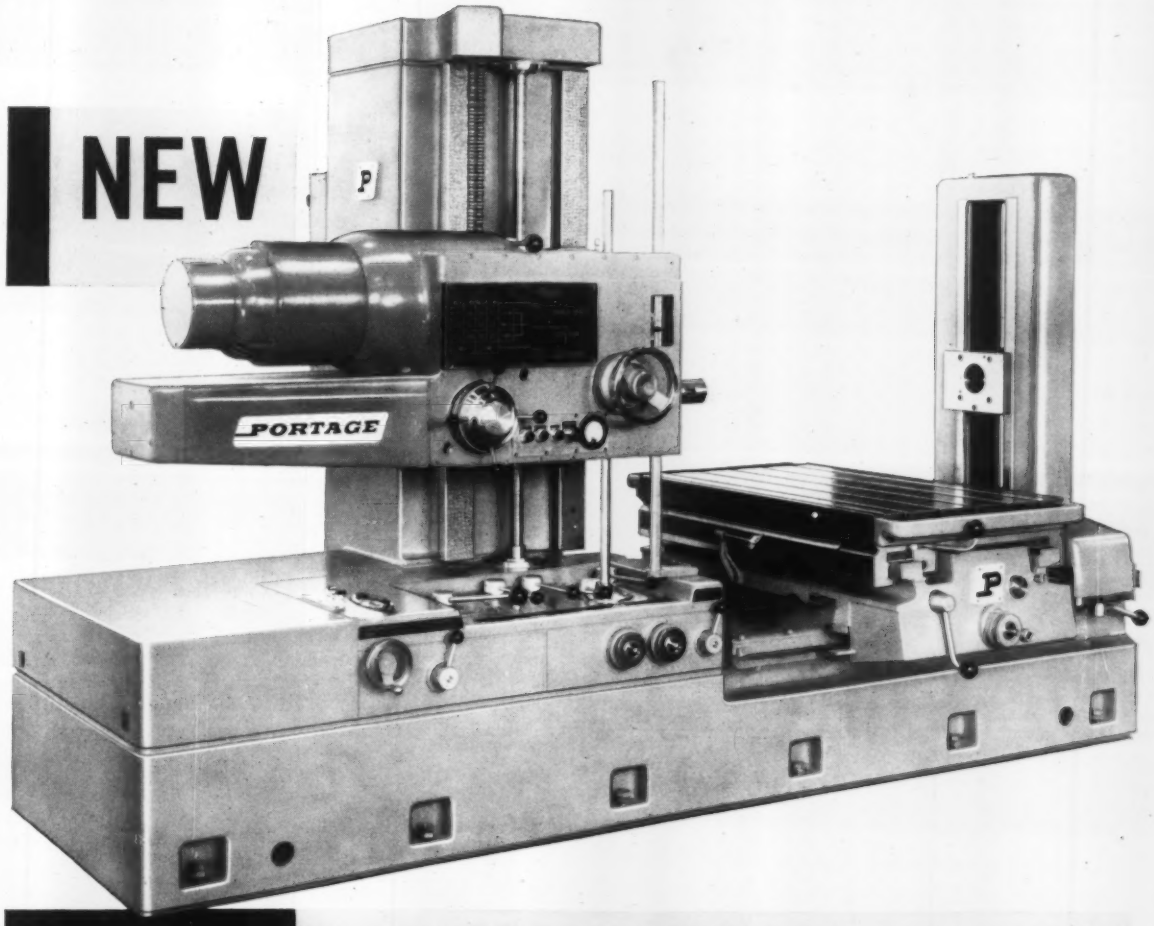
You get clean, dry parts that are ready *immediately* for further finishing . . . its high boiling point (250°F) aids the removal of many high melting soils not affected by low boiling solvents.

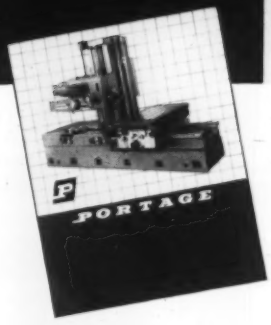
You get extra safety, too . . . Diamond Perchlorethylene is nonflammable, nonexplosive, and its high density means less air contamination.

Your Diamond Representative will give you the full story —so call him today or write Diamond Alkali Company, 300 Union Commerce Bldg., Cleveland 14, Ohio.

Diamond Chemicals

NEW





Literature, just off the press, covers features and specifications.

PORTAGE...3" diameter horizontal milling, drilling and boring machine

Mr. Buyer... here's a 3 inch bar machine you can't afford not to investigate. It's new from the top of the column to the bottom of the base... All new speeds and feeds, plus a versatility of job applications make it a real money maker. All new construction features offer a truly strong, rugged machine... and the pay-off... it's priced amazingly low, every shop can afford one ...write, wire or phone for complete information.

THE PORTAGE MACHINE COMPANY

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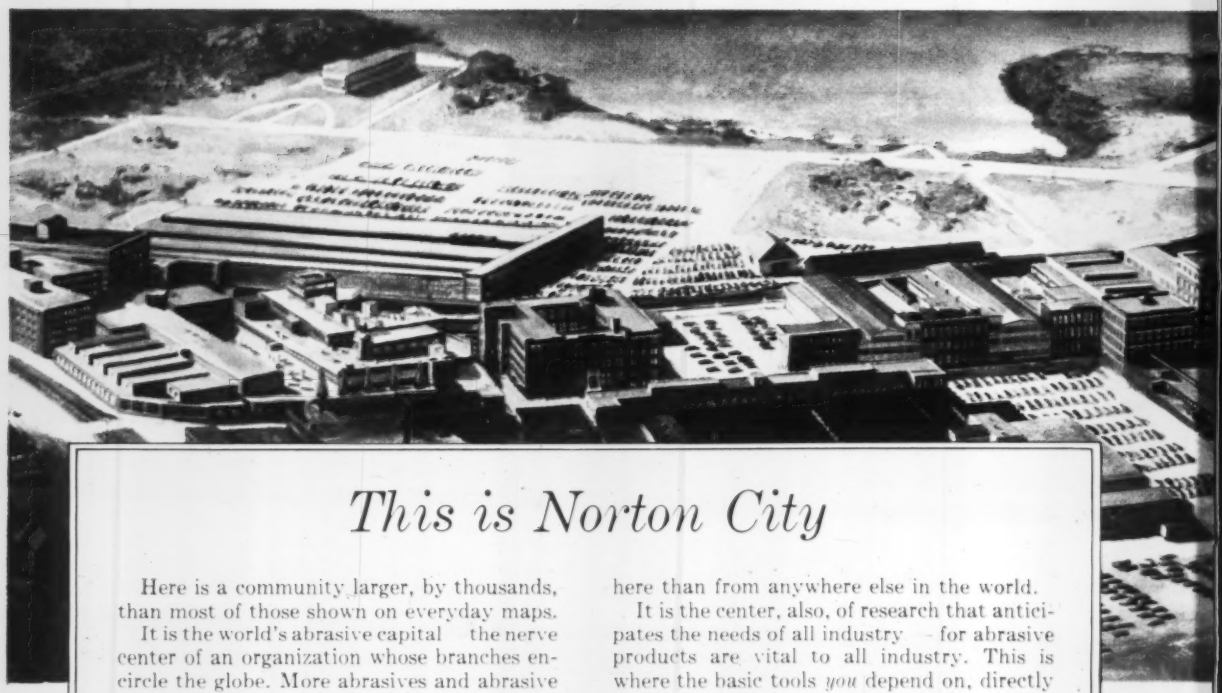
BUILDERS OF PRECISION MACHINE TOOLS, SPECIAL AND PRODUCTION MACHINERY SINCE 1916



This is Norton City

Here is a community larger, by thousands, than most of those shown on everyday maps.

It is the world's abrasive capital — the nerve center of an organization whose branches encircle the globe. More abrasives and abrasive products are shipped from the many plants here than from anywhere else in the world.

It is the center, also, of research that anticipates the needs of all industry — for abrasive products are vital to all industry. This is where the basic tools *you* depend on, directly or indirectly, are made. *This is Norton City.*

Are there any bargains

There certainly are. But you can't evaluate a grinding wheel by its price alone. The only genuine bargains are wheels that bring steady economy to your grinding. You get them from Norton, with these advantages:

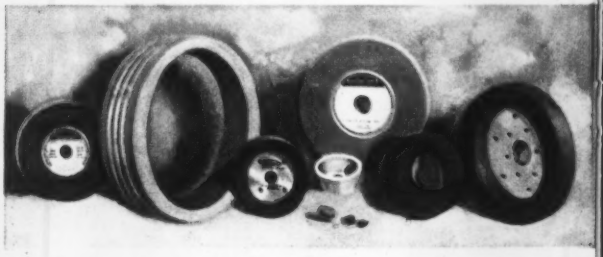
Top quality and top performance, resulting from Norton pioneering in research, engineering and manufacturing.

No delays in your production due to wheel variations, because Norton supplies you with precision-duplicated wheels . . . from complete warehouse and distributor stocks near you . . . meeting standard or special requirements with fast deliveries, regular or emergency.

Lowest cost per piece ground, aided by the product application experience of your Norton Abrasive Engineer . . . who is always ready to assist your production men in selecting exactly the right wheels you need to cut grinding costs.

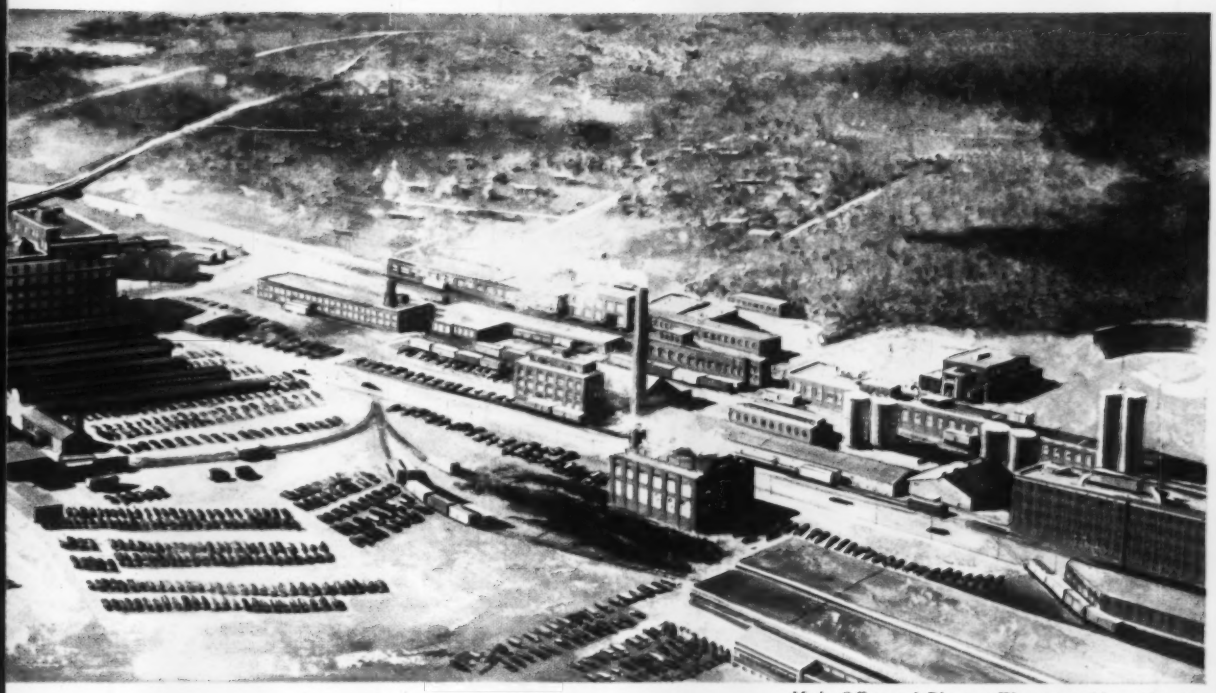
Norton grinding wheels are your real, money-saving bargains — bringing you the "Touch of Gold" that increases product value and production profits.

NORTON COMPANY, General Offices, Worcester 6, Massachusetts. *Plants and distributors around the world.*



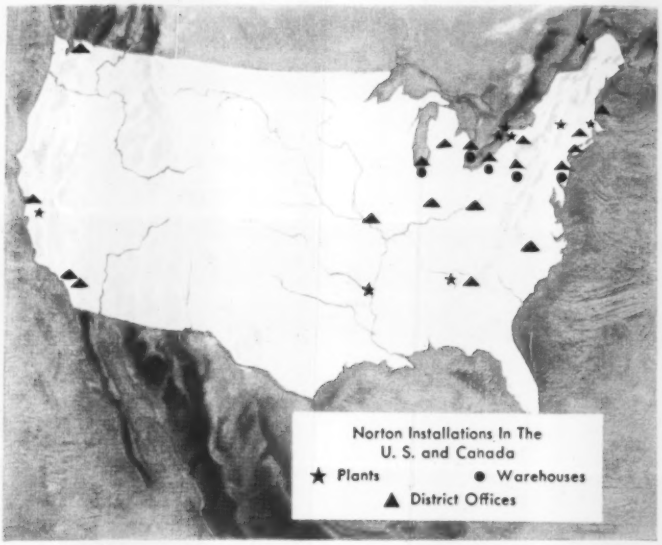
First in abrasives. Abrasives — in particular, Norton grinding wheels and Behr-Manning coated abrasives — are the principal Norton products. Included are all types of abrasives — diamonds among them — the most advanced bonding processes, and every wheel shape and size required by industry.

Making better products...



Main Office and Plant at Worcester, Massachusetts

in abrasives?



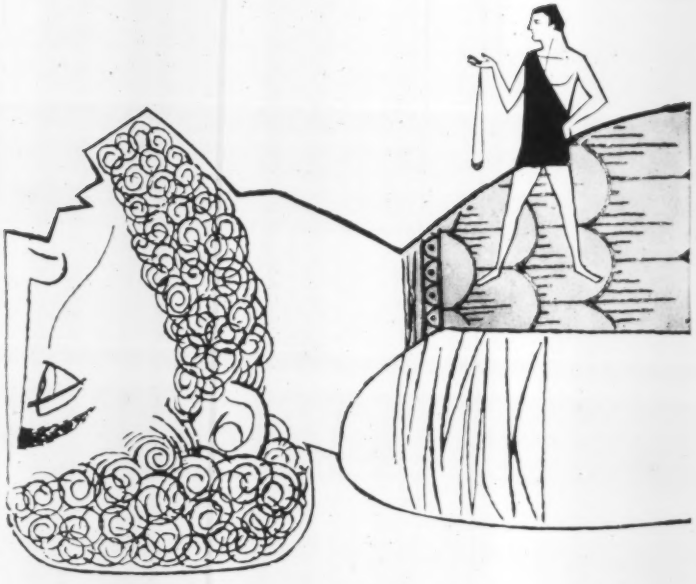
From coast to coast. Besides the Norton plants and warehouses and district offices indicated here, there is a Norton distributor convenient to every manufacturer in the U. S. A. Norton warehouses are located in important industrial centers. Abroad, Norton has plants in England, Northern Ireland, France, Germany, Italy, Australia, South Africa, Argentina and Brazil.

Processes. The first continuous tunnel kiln for processing grinding wheels was pioneered by Norton 30 years ago. This one is a recent Norton development. Used in the firing of grinding wheels, it provides closeness of quality control never before possible. Modern electronics guard quality continuously.

NORTON
ABRASIVES

to make your products better

why use GOLIATH when "DAVE" can do the job at **1/2** the cost?

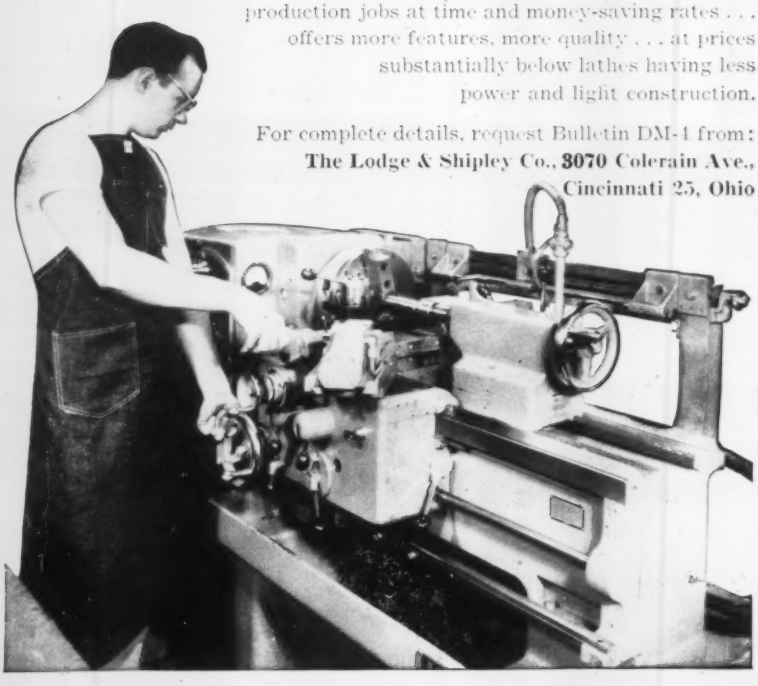


don't pay $20,000 when you can buy a LODGE & SHIPLEY Hi-Turn COPYMATIC TRACER LATHE for less than $10,000

A too-big, too-expensive tool doesn't mean you'll do the job quicker, better or at lower cost. There's new proof of that fact . . . in the HI-TURN 45" COPYMATIC Tracer Lathe!

This rugged and versatile lathe is built to do production jobs at time and money-saving rates . . . offers more features, more quality . . . at prices substantially below lathes having less power and light construction.

For complete details, request Bulletin DM-1 from:
The Lodge & Shipley Co., 3070 Colerain Ave., Cincinnati 25, Ohio



"EXCELLENT FOR HIGH PRODUCTION ON SMALL PARTS," says Indiana Gear Works, Indianapolis

This well-known precision gear manufacturer has a number of Lodge & Shipley lathes in a busy plant. The latest is a Hi-Turn COPYMATIC, evaluated as follows:

SPEED RANGE:
"The wide range of speeds available on this machine is definitely an advantage."

FEED RANGE:
"We are able to select the correct feed for all parts run on the machine."

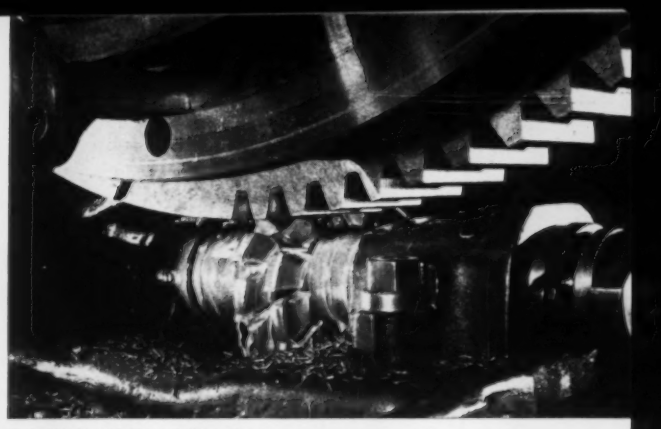
DINABRAKE MOTOR:
"Speeds production."

HP AMMETER:
"Enables the operator to run the machine at full capacity."

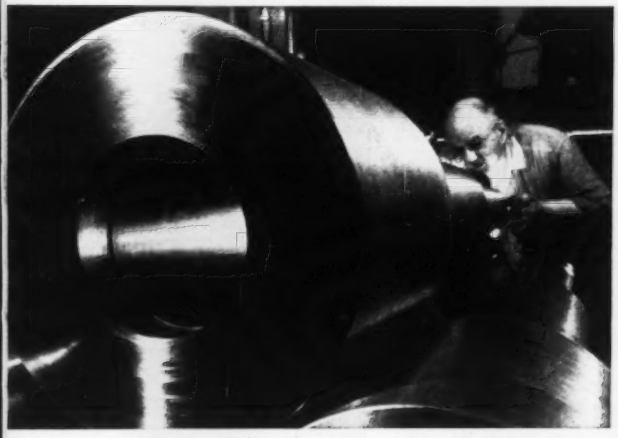
DESIGN:
"Compact, provides ease of set-up."

ACCURACY:
"Good."

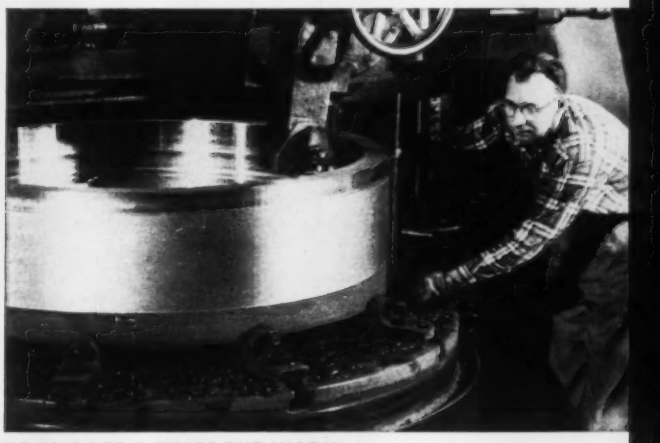
SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.



700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.



TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.

HOW ALCO'S EASY-MACHINING HI-QUA-LED STEEL* FORGINGS CAN CUT YOUR PRODUCTION COSTS

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records throughout industry. In case after case, a switch to Hi-Qua-Led Steel forgings has resulted in greatly reduced machine time, longer tool life and improved surface finish with closer tolerances.

These unique cost-cutting benefits are provided by Hi-Qua-Led Steel forgings with all the other physical characteristics of regular steel in the same AISI grade. You get the same service in your end product.

ALCO specialists will be happy to demonstrate these profit-boosting characteristics on your own machines, in your own plant. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide.

For a technical booklet on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 155, Schenectady 5, N. Y.

***HI-QUA-LED STEEL**—ALCO's registered trademark for its special process leaded steel forgings that are making outstanding reductions in machining time, tool wear and production costs.

ALCO

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NEW YORK

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INTRODUCING!

New Hamilton open-back inclinable presses

Special features of Hamilton OBI Presses include stress-relieved welded steel design — lowers deflection so that up to 50% more stampings can be produced before dies require regrinding; disc-type air clutch, mounted on the crankshaft, to permit low-inertia starting with reduced heat generation; special air-released, spring-actuated brake for maximum efficiency and production speed with low heat loss; extreme stability and wearing qualities made possible by a wrist pin and crosshead type connection.

Write to Dept. 1-H for Bulletin 13302

Hamilton Division Hamilton, Ohio

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Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools

BALDWIN BLH LIMA-HAMILTON

Entry side of 110-in. 4-high reversing hot mill with underdriven edger designed and built by Loewy-Hydropress for Kaiser Aluminum.

New Loewy 4-high slab and plate mill features automatic adjustment of screwdown, edger, sideguards

Designed for high productivity, automated operation, low maintenance cost, and minimum downtime, this new 110-in. 4-high universal slab and plate mill reaffirms Loewy-Hydropress' position of leadership in forming metal. Programmed punch card operation controls the adjustment of screwdown, edger and sideguards in any required preselected sequence, thus relieving the operator of the many split-second decisions usually required. The edger is an underdriven, close-coupled, vertical unit. Rolls are readily removable without disassembly of spindles or any other associated equipment. Horizontal rolls are easily changed by a motor-driven roll changing sled.

Loewy has also built other mills and auxiliary machinery for the same plant.

Loewy designs and builds special machinery to the most exacting demands, modernizes and rebuilds existing installations, supplies completely equipped new plants. And with the vast facilities of the entire Baldwin-Lima-Hamilton organization at our disposal we can complete your job on time . . . very likely even ahead of schedule. For further information, write us at Dept. B-8.

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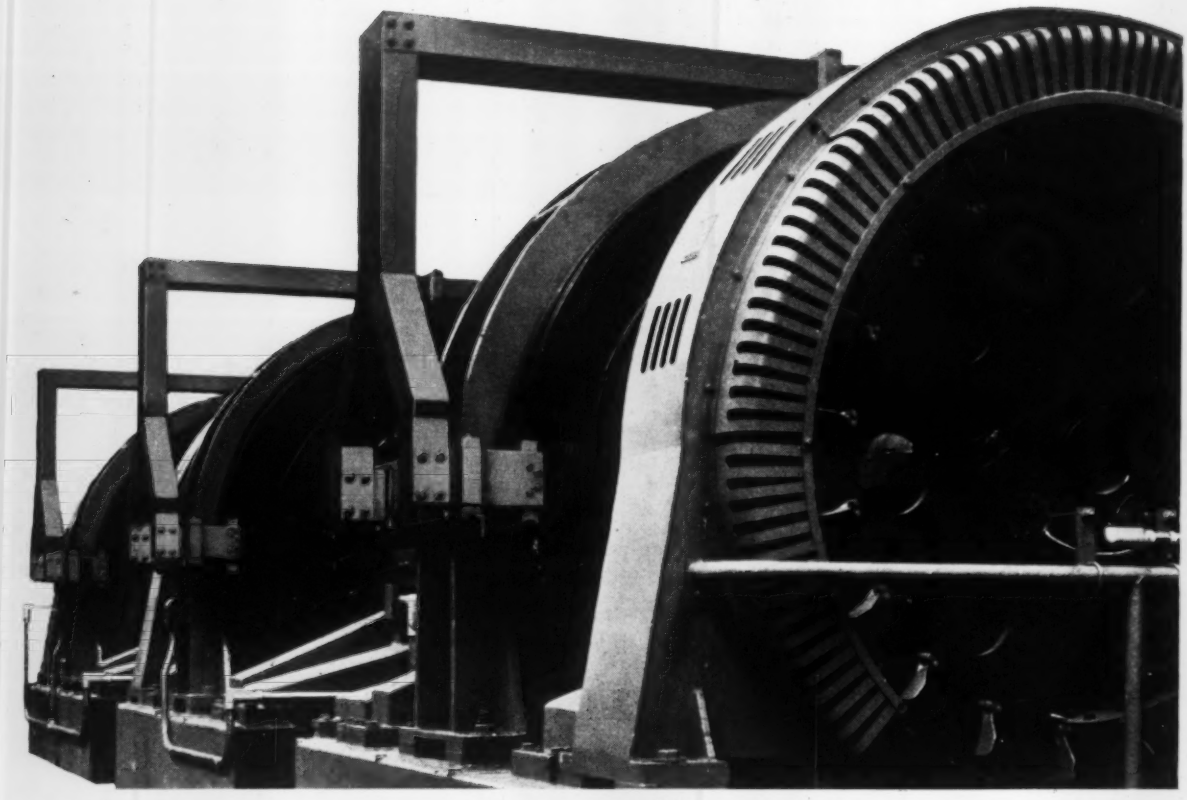


REVERE COPPER BUS BAR

used in two new 700-ft. long Udylite Bumper Plating Machines at

FORD MOTOR COMPANY

Aids in the production of a new, more durable, corrosion-resistant finish

Said to be the world's largest, the two Udylite plating machines are capable of turning out, per machine, 35 racks of bumpers an hour through 10 stages of a 3½ hour plating cycle. The electro-plating installation uses eighty generators, varying from 5,000 to 20,000 amps, which combined, provide enough power to light more than 150,000 bulbs of 100 watts each.

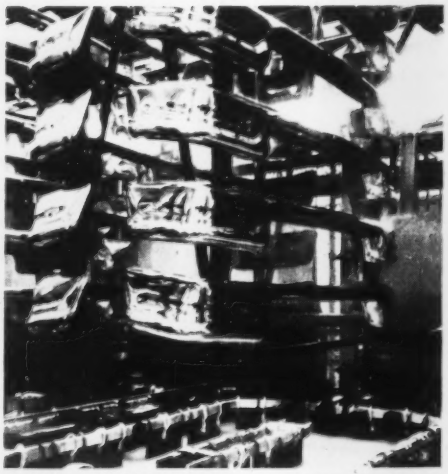
To carry that kind of a load from generator to plating machine, Revere Copper Bus Bar was used because of copper's superior electrical and heat conductivity. No other commercial metal of the same cross-section area approaches electrolytic copper in its ability to carry electricity, while its high thermal conductivity offers the greatest ease of cooling. This means a more compact installation with a resultant saving in space. Also, joints of high electrical conductivity are readily made by soldering, brazing or bolting. For information on Revere Bus Bar, as well as other Revere copper and brass mill products consult the nearest Revere Sales Office. You'll find it listed in the yellow pages of the telephone directory.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

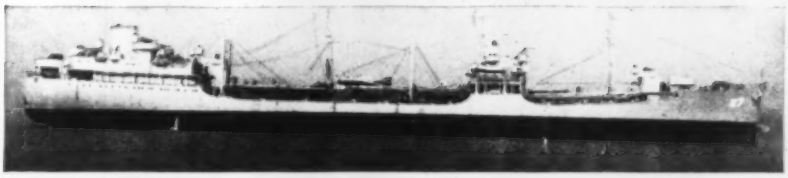
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N.Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N.Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities. Distributors Everywhere.

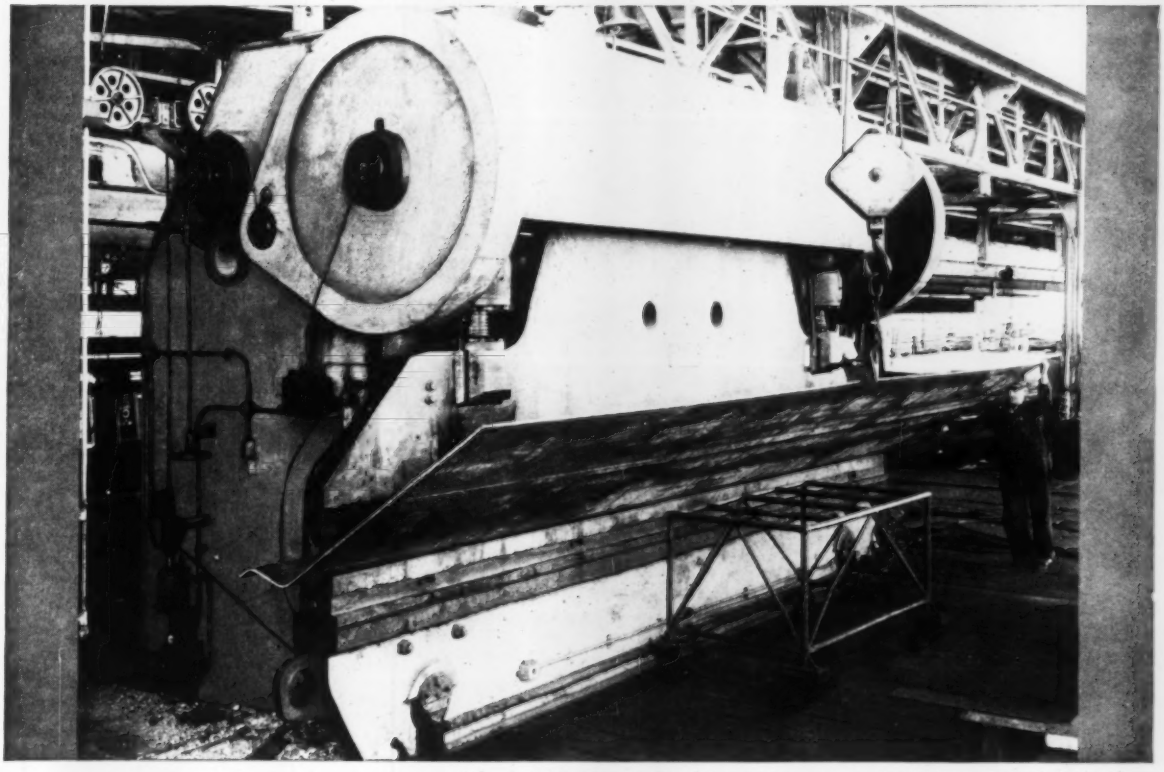


RACK OF BUMPERS ready for immersion into plating solution at Ford Motor Company's plant at Monroe, Michigan. New process uses copper, white brass, nickel and chromium which results in outstanding durability.

U.S.S. KASKASKIA is typical of many ships which have had extensive bulkhead and other repairs at Moore Dry Dock Company.
Official U. S. Navy Photograph



Moore Dry Dock SPEEDS MARINE REPAIRS

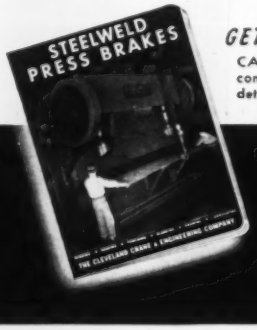


Fluted bulkhead plate being formed by Steelweld bending press in plate shop of Moore Dry Dock Company for bulkhead renewal job on U.S.S. "KASKASKIA" (A027). Size of plate: length 26', width 6', thickness ½".

Long a leading West Coast ship builder and marine repairs concern, the Moore Dry Dock Company, Oakland, California, has found a large Steelweld Bending Press to be a great asset in speeding the forming of heavy plate.

Ship repair, which constitutes an important part of the company's business, often requires replacement of large sections, such as bulkheads. This necessitates the forming of plates to various shapes to accurately replace those removed. Because of the power of their Steelweld and the ease of making adjustments, this work is carried on efficiently and satisfactorily.

The entire line of Steelwelds has an enviable reputation for continuous high-production performance. We urge you to get the facts on their many outstanding features.



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CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

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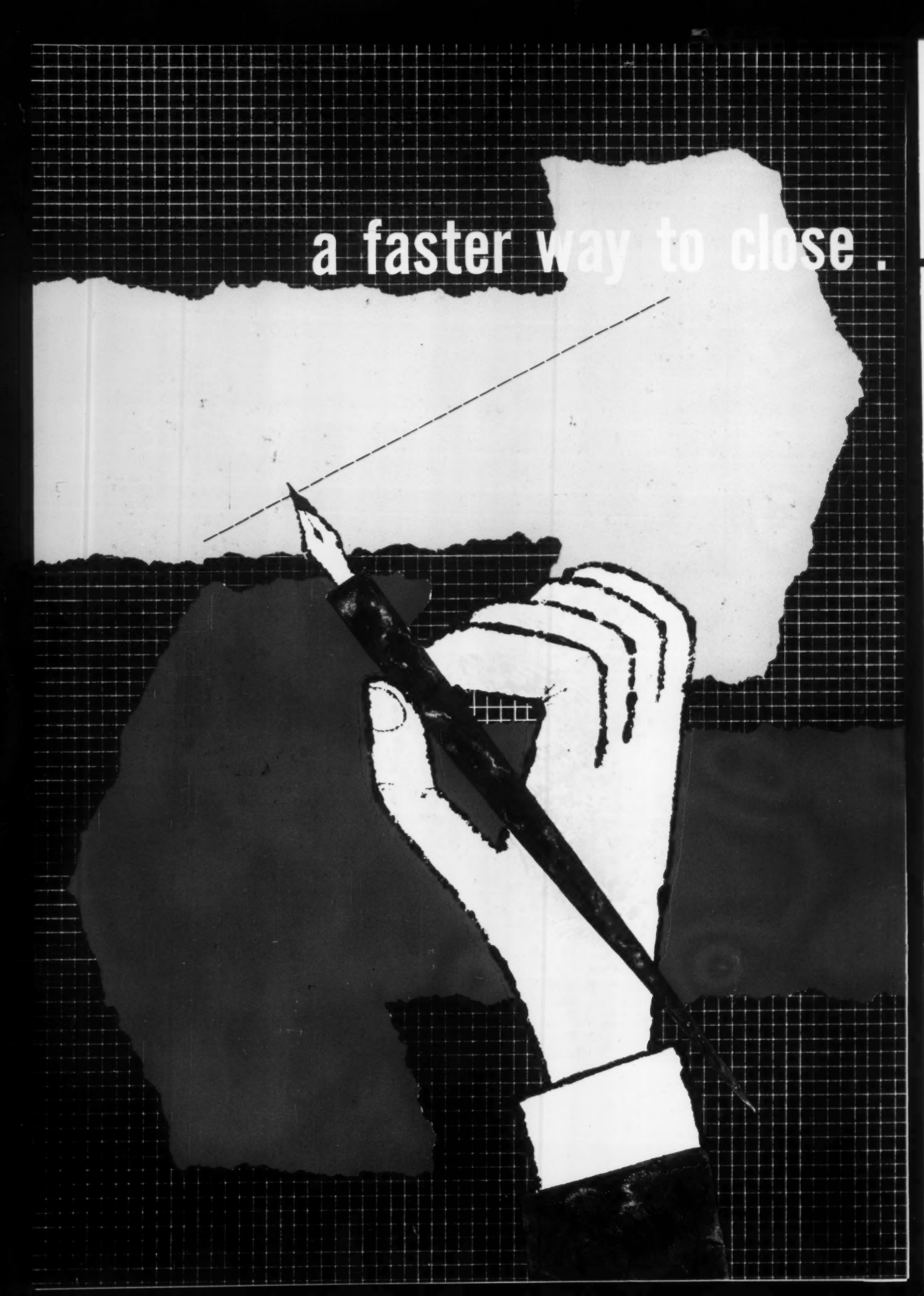
PRESS BRAKES
BRAKING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING

a faster way to close.



. . more industrial sales

Top management wants to move more industrial goods at a profit.

What's the answer? Better marketing. A *faster* way to close more industrial sales.

That is why so many purely industrial companies are turning to a proved mass selling technique, to help their salesmen move more goods within industry . . . improved *two-way communication.*

Communication *from* your market—finding out what industry wants—where the most promising markets are—what advantages motivate the buyer.

Communication *to* your market—helping to raise the productivity of the salesforce . . . make multiple sales contacts among industry's complicated group buying patterns . . . make selling more profitable.

The answers to many of marketing's questions are already available. You'll find practical, helpful information in FOUNDRY's "Foundry Industry Marketing Guide"; STEEL magazine's new book "Metalworking Markets in the U.S."; MACHINE DESIGN's "Geographical Analysis of the Original Equipment Market"; AUTOMATION's "Confidential File"; N.E.D.'s "How to Get Industrial Buying Action".

Better readership in the right places will give you improved communication *to* your market. Penton's selective industrial publications have won an important place on the marketing teams of many leading companies for just this reason. They deliver the top readership of the most important buying teams in their markets.

The Penton representative who calls on you is your partner in marketing. He can show you effective, proved ways of strengthening your market communications—to help achieve top management's goal . . . moving more goods within industry, at a better profit.

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Quality begets quality — it's an established axiom that premium products must begin with quality components. BISHOP has been producing platinum and precious metal products since 1842 . . . *precision* stainless steel tubing since 1931. The BISHOP family of metal products includes a broad variety of components for the designer, engineer . . . just to mention a few:

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Thermocouple Wire—noble metal and noble metal alloys
Tubing—nickel, stainless, platinum, special alloys up to 1" OD
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Begin your next design with *unexcelled* quality BISHOP component materials. Write, wire or phone Malvern 3100.

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platinum works
MALVERN, PENNSYLVANIA

"SAY THAT AGAIN.. ..I DARE YOU!"

Okay . . . we'll say it again! There's an easy, simple solution to your *Grinding Wheel Problems*—Just switch to CINCINNATI (PD)° WHEELS! CINCINNATI Grinding Wheels offer *positive duplication*—a remarkable achievement in precision manufacturing and quality control that can save you money and increase your production.

Pounce on these facts: Through the CINCINNATI (PD) Manufacturing process, you are assured Positive Duplication of the original wheel every time you re-order. "On Grade" with a CINCINNATI (PD) WHEEL means all future (PD) WHEELS will act and grind exactly alike! Yet CINCINNATI (PD) WHEELS *are priced no higher than ordinary wheels!*

So "Hold That Tiger". . . and hold down those costs! See your CINCINNATI Grinding Wheels Distributor. He'll be glad to explain how (PD) WHEELS can save you money and increase production. Or contact us direct and we'll send one of our representatives—men who know grinding and grinding machines, as well as grinding wheels. Write, wire or telephone Sales Manager, CINCINNATI Milling Products Division, Cincinnati 9, Ohio.

REMEMBER—*only* CINCINNATI (PD) Grinding Wheels give you

(PD) POSITIVE DUPLICATION

CINCINNATI°

GRINDING WHEELS

A PRODUCTION PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.

°Trade Mark Reg. U. S. Pat. Off.

Unscheduled fire drill at Carle Place (N. Y.) High School. Building was vacated in two minutes, ten seconds . . . fast, but not as fast as an automatic fire sprinkler system goes to work.

How fire puts itself out

Only two minutes and ten seconds have gone by since the school's bell rang for an unscheduled fire drill.

Everybody's out now. And so would be the fire itself—*in a building where an automatic sprinkler fire protection system stands guard.* This is one certain way to extinguish a fire before it can get anywhere.

Automatic sprinklers today are built to remain pressure tight for years . . . yet designed to respond *instantly* when fire starts.

Certain foolproof materials in their construction hold the key to this performance. Inconel* nickel-chromium alloy valve springs, for example, which one famous maker uses in the sprinkler head.

Regardless of how long they wait in tensed readiness, Inconel alloy springs stay in shape . . . keep their resiliency for trigger-quick response when fire breaks out. And because Inconel alloy resists corrosion under even the severest conditions, the springs provide a lasting, water-tight seal all the time they wait.

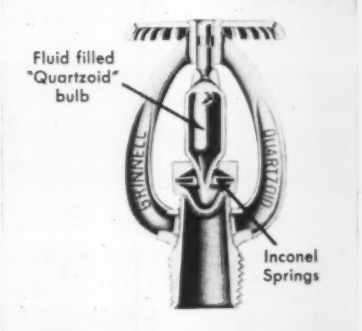
By the way, if you would like to have the important facts and information about this nickel-chromium alloy, just ask us for "Engineering Properties of Inconel."

Do you have a metal problem in which corrosion is a major factor? Or wear? Or high temperatures? Or some destructive *combination* of conditions? Then look into the Inco Nickel Alloys. Their properties are described in a helpful booklet called *Standard Alloys for Special Problems.* Write for a copy.

*Registered trademark

The International Nickel Co., Inc.

67 Wall Street INCO New York 5, N. Y.



In fire-fighting trim. Cutaway view of automatic sprinkler manufactured by the Grinnell Corporation, Providence, R. I. Fluid-filled "Quartzoid" bulb bursts when temperature reaches danger point. This action releases the tensed Inconel alloy springs that hold the valve closed with 155 pounds load, starts sprinkler system immediately.

INCO NICKEL ALLOYS

NICKEL ALLOYS PERFORM BETTER LONGER

Metalworking Outlook

Odds for Auto Strike Rise

Odds are rising that there will be an auto strike. Neither side wants one, but each has assumed positions difficult to retreat from. GM has already signed with 12 other unions on terms calling for extension of present contracts. It would hate to repudiate those pacts by offering something better to the UAW. The union has stalled so long (costing its members more than $8 million in cost of living and annual improvement raises they would have won if the old contract had been extended) that it would lose face by settling on company terms. If the walkout comes, it will be in late September or early October at new model time.

Walkout Would Be Aimed at Ford

An auto walkout would probably be aimed first at Ford. The union fears that a strike against Chrysler wouldn't necessarily influence GM and Ford. Action against GM would be far more expensive than it would be at Ford. But the Big Three are still showing astonishing solidarity, so look for operations at the other two to end during the Ford walkout. Delicate problem for management: How to achieve a stoppage across the board? Walter Reuther will move heaven and earth to keep the workers on at GM, so he can apply his previously successful divide-and-conquer tactics. A lockout by auto management is legal but an unpopular course.

Auto Strike Would Be Long

If a strike comes, it will be long, washing out any chance of a 1.4-million auto buildup scheduled for the fourth quarter. That doesn't alarm the Big Three too much. Market forecasts show a 5-million car run in store for '59 models. They could be built in the first nine months of 1959. But the fourth quarter washout would concern auto suppliers, including steel companies (see Page 129). It would be a big blow to their hopes for a substantial business recovery in the last quarter. Ultimate auto settlement: The present company terms with some facesavers, such as a retroactive date to June 1 and sweeter pension and SUB deals.

Troubles for Mr. McDonald

Reports and rumors about Steelworker President David J. McDonald being "through" are rife because anti-McDonald slates have won in a majority of local elections in the last two months. But he'll hang on because his presidential term has nearly three years to run. The effectiveness of his remaining tenure will be influenced by the speed and skill with which he can rebuild his fences. He hasn't had good luck to date. His presidential opponent, Don Rarick, is still active. Much power politicking will be going on at the steelworker convention, Sept. 15-19, at Atlantic City, N. J.

Farm Equipment Leads Comeback

Farm equipment, in a recession long before most other segments of metalworking felt the pinch, is pulling out of the slump with a bang. Is this a

METALWORKI OUTLOOK ME

front runner that indicates what will happen in the rest of industry six months or a year or so later? Three factors probably account for the resurgence of agricultural machinery: Most equipment sold after World War II needs to be replaced. Farmers are solvent, owing only $11 for every $100 of assets. The industry has come out with a terrific array of new equipment.

Material Handling Industry Revives

"Business in the industrial material handling industry has taken a turn for the better," says Robert L. Fairbank, president of Material Handling Institute Inc. and vice president of Towmotor Corp., Cleveland. The dollar volume of orders in June soared to 131.15, using 100 as the monthly average for the 1954 base year. That's the highest since May, 1957, and prospects are for more increases.

Postwar Profits Overstated 25%?

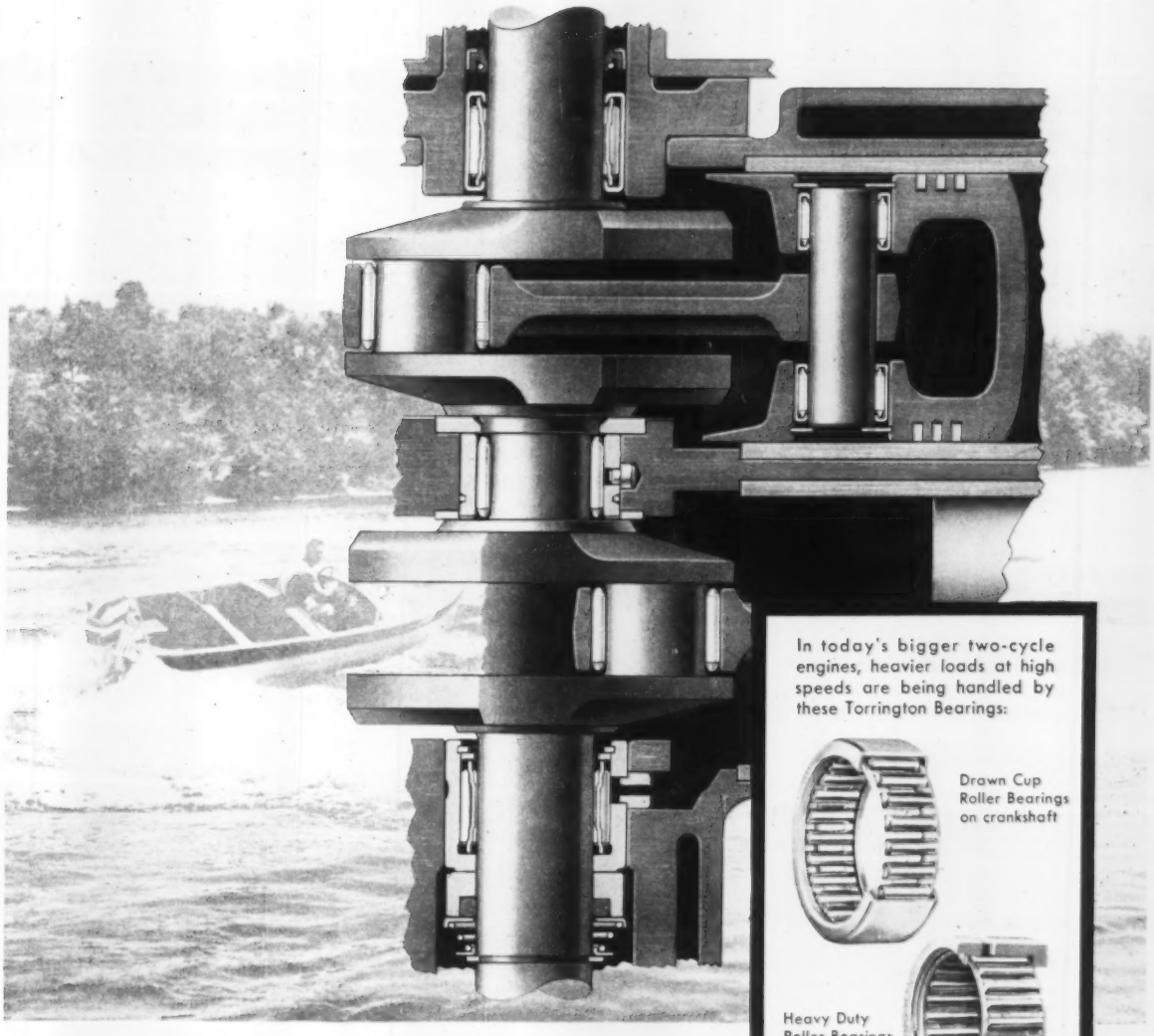
U. S. corporation profits may have been overstated by as much as 25 per cent in the postwar period, says Musa Y. Hussayni, faculty member of the American University of Beirut, Lebanon, and author of a doctoral dissertation accepted by Michigan University. In the 1946-56 decade, reported profits of corporations after taxes totaled nearly $200 billion. But Mr. Hussayni believes the figures conceal the effect of inflation on two key business costs—inventory charges and depreciation of plant and equipment. Inventory profits were overstated by more than $22 billion and depreciation was understated by an additional $25 billion, he charges.

Big Nuclear Spending for Utilities

Electric utilities will spend $60 million this year and $93 million in 1959 to develop economic nuclear power. Some 123 companies are actively engaged in an industry program. Expenditures increased from $14 million for the years through 1955 to $39 million for 1956. Three utilities are participating in nuclear powerplants now operating. Six others have large plants under construction or under contracts, four of which are scheduled to be operating by 1960 and two by 1962. Five other projects are in various stages of planning. The nine in operation, under construction, or under contract will involve over $320 million. The five in the planning stage will cost $200 million.

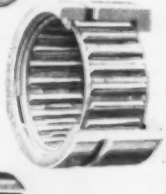
Straws in the Wind

Wheeling Steel Corp. has purchased the cut steel nailmaking facilities at Conshohocken, Pa., from Alan Wood Steel Co. . . . Philco Corp. has run out of present refrigerator and freezer models, so it has introduced six "new" models of each in advance of the usual fall showings to tide dealers over until the regular autumn changeover . . . Prices of structural steel for federal highways dropped 13 per cent in the last year.

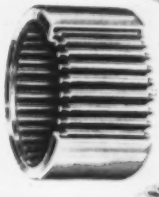


In today's bigger two-cycle engines, heavier loads at high speeds are being handled by these Torrington Bearings:

Drawn Cup Roller Bearings on crankshaft



Heavy Duty Roller Bearings



Full Complement Needle Bearings on wrist pins

Needle Rollers with crankpin ends

Fractured outer race for center main on crankshaft

What's new in two-cycle engines?

Today's improved performance and increased power made possible by recent developments in Torrington Bearings!

In this schematic drawing of a typical two-cycle engine, a Torrington Drawn Cup Roller Bearing and a special Torrington Heavy Duty Roller Bearing provide several improvements in the crankshaft mounting. Shaft-riding retainers guide the rollers at the pitch line and provide ample lubricant circulation. Positive roller guidance insures correct bearing performance despite shaft deflection. Split center bearing on crankshaft features a fractured outer race for positive location of the race halves.

Full complement Torrington Needle Bearings and Needle Roller assemblies with crankpin ends complete the compact, high-capacity design to insure long, trouble-free service life. To secure the advantages of modern Needle Bearing design in your application, consult Torrington's engineering department. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

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District Offices and Distributors in Principal Cities of United States and Canada

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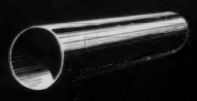
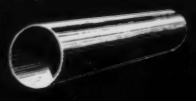


Armco ZINCGRIP® STEEL Tubing

Full-weight hot-dip coating of zinc does not flake or peel during severe fabrication. Resists rust.

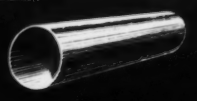
Available in O.D.'s from ⅜-inch to 3 inches; gages from 12 to 20; mechanical or pressure-tested tubing; round, square, rectangular, or special shapes.



Armco ALUMINIZED STEEL Type 1 Tubing

Hot-dip coating of aluminum won't discolor to 900 F—resists destructive heat scaling to 1250 F. Assures top resistance to combinations of heat and corrosion.

Available in O.D.'s from ⅜-inch to 3 inches; gages from 13 to 20; mechanical or pressure-tested tubing; round, square, rectangular, or special shapes.



Armco ALUMINIZED STEEL Type 2 Tubing

Also hot-dip coated with aluminum, provides outstanding resistance to atmospheric corrosion. Serves longer outdoors.

Available in O.D.'s from ⅜-inch to 3 inches; gages from 13 to 20; mechanical or pressure-tested tubing; rounds only.

for *extra* life at low cost...

Durable Coatings of Zinc or Aluminum Protect 3 Special Grades of Armco Tubing

Armco Coated Tubing grades offer all the design advantages of welded steel tubing, *plus low cost protection against corrosion.*

Special hot-dip coatings of zinc or aluminum eliminate the need for painting, plating, or other costly finishing. Just select the grade that supplies the cost-performance combination that your product requires.

For complete information, fill in and mail the coupon.

Other Armco Steels for top-quality products include Stainless Steels, ALUMINIZED STEEL, ZINCGRIP®, ZINCGRIP PAINTGRIP®, Cold-Rolled PAINTGRIP, Enameling Iron, High Strength Steels, Electrical Steels, Long Ternes, and high-quality Hot- and Cold-Rolled sheets.

New steels are born at Armco

ARMCO STEEL CORPORATION, 2738 Curtis St., Middletown, Ohio

Send me information on ☐ Armco ZINCGRIP Steel Tubing
☐ Armco ALUMINIZED STEEL Type 1 Tubing
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ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Selling Any Buggy Whips?

You probably remember the story about the manufacturer who made the world's finest buggy whips and couldn't understand why his sales were falling off.

After he went out of business, post-mortem market research revealed that the automobile had replaced the horse and buggy and practically nobody needed even the finest buggy whip!

Even today, there are hundreds of products in the buggy whip classification that are still hanging on but will become fond memories tomorrow.

More light was cast on this appalling situation when the editors were developing material for No. 7 in STEEL's 1958 Management Series (Surveying the Market, Page 85).

They found plenty of market research being done in the area of consumer durables and expendables such as home appliances, food, beverages, and clothing.

But in the industrial hard goods area—materials, parts, machine components, and the like—few companies are doing outstanding market research. Most of them regard it as a mysterious new fad for the other fellow to dabble with.

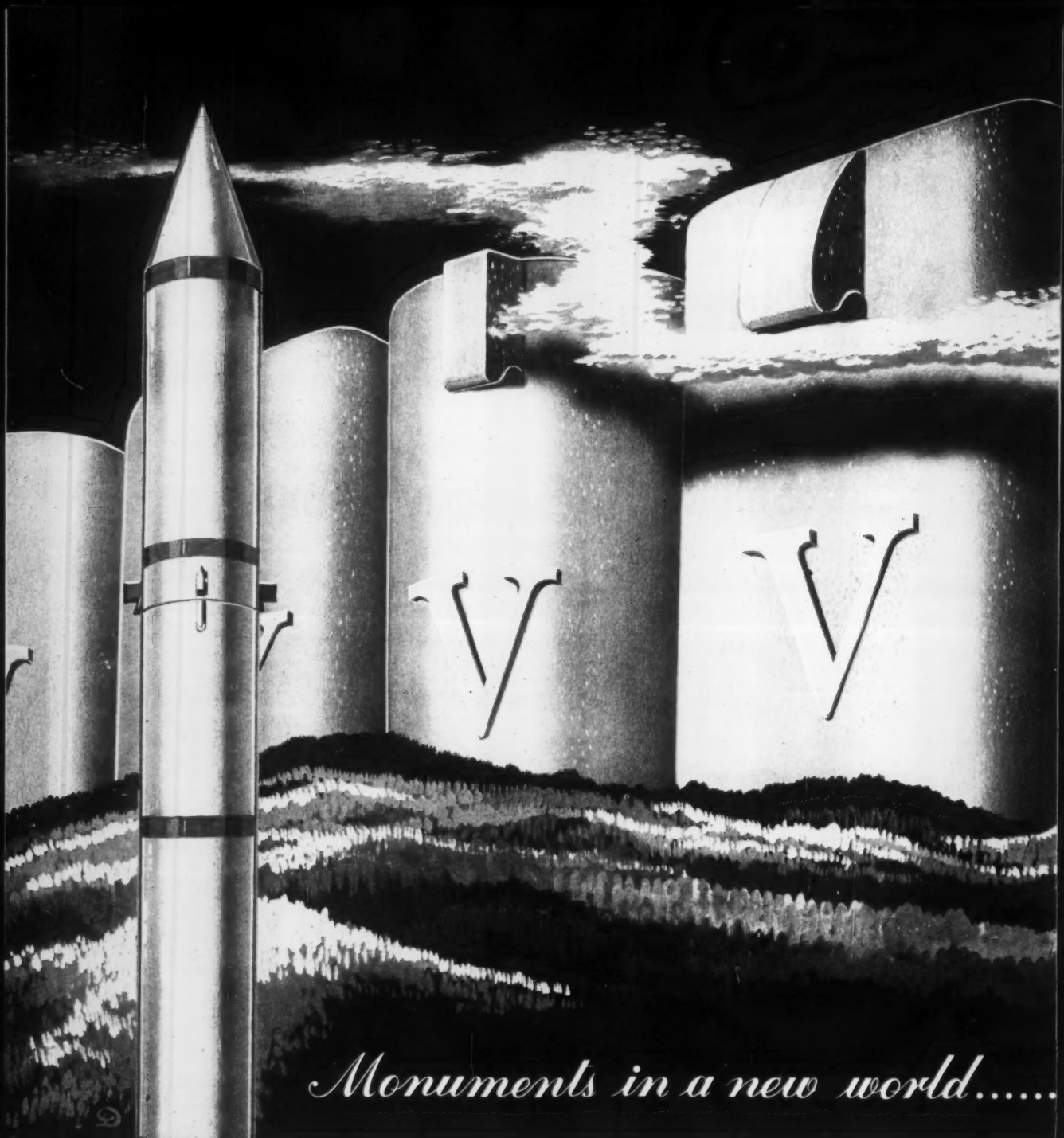
Actually, market research is simply finding out what the customer wants. It means using information at hand or readily available to determine whether the products you make will have a market two, five, or ten years from now, or whether new products will sell.

Market research has become an essential link in the process of designing, making, and selling a product.

It is the basis for better planning, for making better decisions.

If you aren't doing market research, we think you should. You may be selling buggy whips and don't know it!

Irwin H. Such
EDITOR-IN-CHIEF



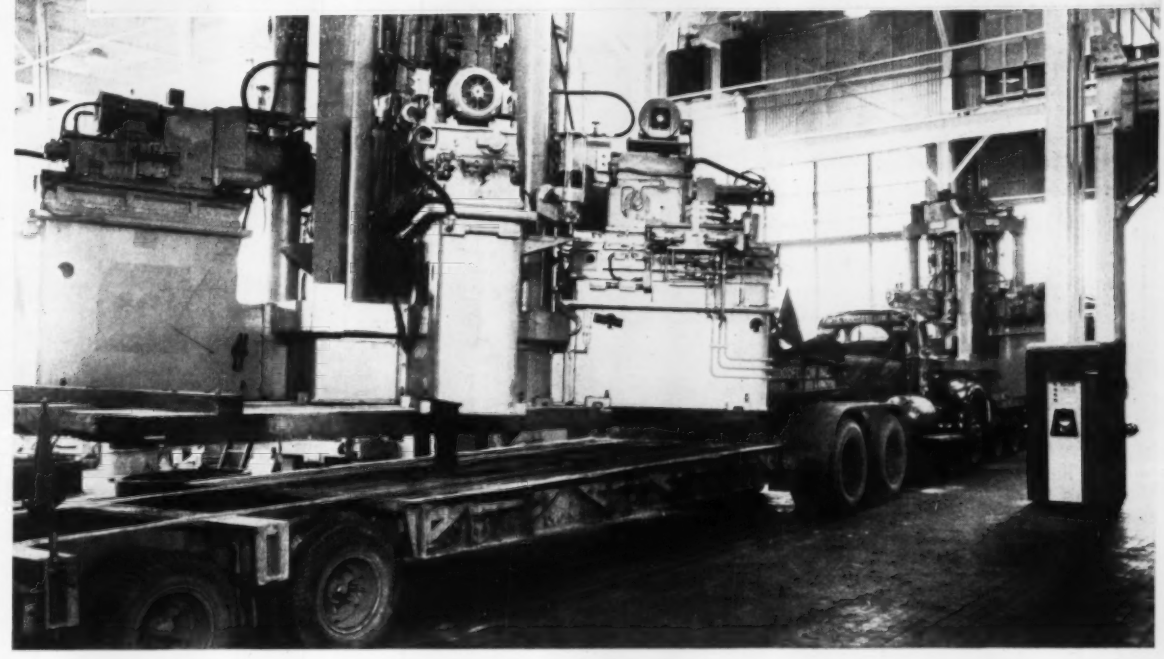
Valley ingot moulds are designed for individual steel plant conditions. These moulds meet today's metallurgical requirements

VALLEY MOULD AND IRON CORPORATION

GENERAL OFFICES: HUBBARD, OHIO

Western Office: Chicago, Illinois. Northern Office: Cleveland, Ohio

Special Machines: Extreme Buyers' Market



Builders strive to keep the nucleus of their skilled forces busy. Backlogs average 17 per cent under what they were a year ago, but business should pick up in late '59 or '60

A MANUFACTURER of automotive parts has ordered a new, special purpose machine he won't need until September, 1959. (February is the delivery date.)

But he isn't out of his mind. He's simply taking advantage of the most extreme buyers' market in special machines he has ever seen. (A special is designed and built for a specific job on specific parts.)

The dozen leading builders visited by STEEL (they have 70 to 80 per cent of domestic special machine capacity) substantiate the buyers' market. Price competition is tough—in some cases it's fierce. Most builders are quoting figures that closely approximate their costs.

They reason: It's better to take a job that will cover direct labor, materials, and overhead than to support an idle plant. In one case (admittedly extreme) a group of builders bid $550 to $1900 per unit on a government contract for special weapon positioners. It went to the low bidder.

One of the losers computed the amount of material and work in each unit and guessed that the winner was charging something like $2.50 per hour for the work, which wouldn't even cover direct labor.

Other comments made to STEEL editors:

"We bid $57,000 on one contract that went for $31,000. We can be wrong—but not that wrong."

"We wanted a fixture contract, so we bid low—$4700 per unit. The job went for $3200."

No Waiting—Delivery time is nearly equal to building time. Almost every builder has idle production capacity and plenty of engineering and estimating time.

Quality is still high—despite layoffs, key men are still on the job.

Business Prospects — You hear some reports that the special machine business is on the upswing, but signs of improvement are slight. At best, the fourth quarter may show slight improvement over other periods this year. Reports of an early boom probably are steeped in wishful thinking.

Orders will come in, but they are from scattered industry groups and plants. Undoubtedly, there's

Fourth Quarter Prospects for Special Machine Tools

STEEL asked a dozen leading builders of special machine tools what sort of business they expect in the last quarter this year. Here is a summary of the replies:

- **All expect new orders to pick up, but only slightly. They attribute the increase to a general confidence in the economy on the part of customers rather than to any significant large programs. No builder sees a boom this year.**

- **Nine builders have a total of about $118 million worth of outstanding quotations on new equipment. The range: From $3 million to $30 million. Most often mentioned: About $5 million.**

- **On the average, about 13 per cent of outstanding quotations turn into firm orders. That would mean roughly $15 million worth of new business for the nine builders.**

- **Outstanding quotations for the companies are from 4 to 30 per cent under what they had on the books at the same time last year. Only two builders said they have more quoted now than they did last year.**

enough buckshot business to sustain the well-managed builders, but, at best, most firms are working at a low level of prosperity. Some will be in the red in 1958. Next year should be slightly better.

The shot in the arm that's needed but not likely to come this year: A substantial equipment buying program in any of their customer industries.

Chances — Automakers (the industry's biggest buyers) will probably spend piddling amounts, certainly through the rest of this year, maybe through 1959. A great deal depends on what they decide to do with their 1961 models. If there are sufficient changes in engines, transmissions, or other machined components in 1961, equipment buying will be done in mid-1959. That's the best prospect for a boom in specials.

Builders are pinning their hopes on the rear axle transmission. Both Buick and GM's Detroit Transmission Div. are working with it. Detroit Transmission is expected to wind up with it as part of GM's standardization program—the target date is 1961. Chrysler is also eying the transaxle.

Small cars are big conversation pieces, but there's surprisingly little buying of new capital equipment for them. Take Chevrolet's forthcoming offering. Its Tonawanda, N. Y., plant will build an air-cooled aluminum engine (a horizontal, opposed piston, 6 cylinder unit which will be mounted in the rear of the car). Capital expenditures for new engine facilities normally run near $50 million. Reports peg this project at $8 million to $10 million.

Most of the line is equipped with retooled machinery, selected from GM's long list of equipment that can be spared. Only a handful of new machines were bought.

Chevrolet's small car transmission will be built at Toledo, Ohio —probably on rebuilt and retooled machines. The axle will be made at Buffalo.

Ford—Ford's small car will have a small, conventional, 6 cylinder powerplant. It'll be made on a rebuilt and retooled V-block line from the Lima, Ohio, plant. Anticipated production rate: About 75 blocks an hour.

Elsewhere in the Ford empire there's little talk of big programs. Transmissions and axles are well tooled. There's little prospect for an early change that will lift the special machine industry.

Chrysler—Management at Chrysler has put through a crash program for a small car. The best engine bet now is a 6-cylinder, die-cast aluminum block—it's still a design proposal. But, again, a host of capital equipment is available for rebuilding.

American Motors—Sales figures show why AMC management is happy to go with its present engine, transmission, and axle. Cars will be updated with aggressive styling changes, but they mean orders for tool and die makers, not machine tool builders.

The Trend — Automakers will continue to turn to their vast stocks of used equipment; orders for rebuilds will predominate.

Also watch for intraindustry swapping of equipment. Ford found what it wanted for its Brazil truck operations at De Soto. Such co-operation extends the list of used equipment available to each company.

Elsewhere — Road equipment makers expanded a year or more ago when the President's road program seemed imminent. Farm equipment makers are busy and prosperous but entertain few thoughts of expansion. Several have new engine programs or new tractor programs that will give some business to machine tool builders—but they won't spell a boom.

Expenditures for aircraft production equipment continue to drop. Most missile money is going into research, development, and instrumentation. Only a little is going to the machine tool industry.

What It Means to Users—You can take advantage of the extreme buyers' market until at least the second quarter of 1959—maybe until sometime in 1960. After that, the expansion expected in the 1960s will put the bulge back into builders' order books.

Dow Chemical Co.

Metals Vie for Plate Sales

Aluminum tooling plates are the big seller, but producers of magnesium are making an effort to grab a bigger share of the market. Here's a rundown on the two metals

MAGNESIUM and aluminum producers are battling for tooling plate markets. Competition is particularly hot in the aircraft and missile fields where lightness and strength are important. Some side skirmishes are being waged in automotive and appliance tooling.

Joseph Pollack, sheet and plate product manager, Reynolds Metals Co., Richmond, Va., estimates some 12 million lb of aluminum tooling plates are used each year. Dow Chemical Co., Midland, Mich., expects to sell 850,000 lb of magnesium tooling plates this year—the other producer, Brooks & Perkins Inc., Detroit, is just getting started. It buys semifinished stock from Dow and rolls its own. B&P figures this year's sales will reach 50,000 lb; 1959's possibly 125,000 lb.

A Strong Contender—Aluminum tooling plate has been around since World War II. Dow introduced its product in 1954. A year later annual sales stood at 350,000 lb and by last year they had soared to 1 million lb. Guy de Kuiper, magnesium mill product sales manager, says he sees no reason why magnesium makers can't double their sales in the next few years. Dow is adding to its five distributors.

Where Cost Counts—Two years ago, Dow could claim a cost advantage although magnesium costs more per pound. The fact that it's two-thirds the weight of aluminum makes it cheaper per piece. In 1956, a magnesium plate (96 x 48 x 1 in.) cost $207.19, compared with $283.67 for a similar cast aluminum plate. But today, after two years of price and product adjustments, the same size plate carries these prices in Detroit, for example: $303.85 for magnesium and $308.72 for 6061-T6 aluminum.

Aluminum prices are more competitive on the West Coast where more tooling plate is sold, but in the East, Dow claims it has the edge because magnesium is lighter.

Quality—Reynolds and Dow cite thickness tolerances of plus or minus 0.010 in. and where aluminum offers tensile and yield strengths of 30,000 and 20,000 psi, magnesium claims 35,000 and 18,000 psi. Magnesium's thermal expansion rate is slightly less.

In surface finish, wrought aluminum has a slight edge (32 microfinish, against a typical 60 to 70 for magnesium). Flatness-thickness deviations are almost identical, but Reynolds makes wrought plates up to 4500 lb; magnesium's maximum tooling plate size runs 1800 lb.

The Flyweight—Dow claims other advantages, principally lightness. With cost and quality factors relatively equal, it is an asset for tooling requiring manual handling. In many cases one man can handle a magnesium jig or fixture.

Easy To Machine—One of magnesium's strongest supporters, an aircraft firm, makes 75 per cent (by volume) of its tooling from the lighter metal. The company says that the metal can be readily welded by shielded arc methods.

Safety—Magnesium chips are dif-

ficult to ignite, and plate is practically nonflammable under 1075° F, says Dow. But grinding and polish operations call for caution. The fine magnesium dust that collects must be caught in special wet type dust collectors that can be costly. Dow denies that insurance rates go up just because a plant starts using magnesium.

Mr. De Kuiper says Dow is continuing to educate its prospects on the fire angle by pointing out that good housekeeping methods will prevent trouble. The company has also made an educational movie, "Another Case of Tomatoes," to convince viewers that many of the tales about magnesium's combustibility don't apply when it's properly handled.

The Decision—It's doubtful that sales of magnesium tooling materials will soon equal those of aluminum, but as more users become familiar with its advantages, Dow stands a good chance of hitting its doubled sales target by 1965.

Gas Projects Mean Steel

The natural gas industry had construction applications requiring more than 2,368,000 tons of steel before the Federal Power Commission on Jan. 1. Between then and Apr. 30, applications totaling $330 million were filed, *Natural Gas Construction Data* shows.

Construction authorized by the FPC in 1957 involved 3356 miles of pipeline, requiring about 670,000 tons of steel line pipe.

Auto Parts Show Gain

Makers of auto accessories and parts are having a good year despite (or perhaps because of) the lag in new car sales.

The National Automotive Parts Association, Detroit, reports 1958 sales of replacement parts are 9 per cent ahead of last year's. The trend is expected to continue.

Mufflers are one thing showing particularly impressive gains. This year's sales are expected to hit $500 million, vs. $57 million in 1953.

Auto air conditioning units also have registered increases. Sales of such units (installed in both new and old cars) are expected to jump to $150 million this year, compared with $100 million sales last year.

State Plan Woos Industry

	1956	1957
New Industrial Projects	**448**	**489**
Idle Plants Reoccupied	**72**	**103**
New Jobs Created	**28,571**	**33,675**

Keystone State solves labor surplus problems. Co-operation between towns, businessmen, and government created 33,675 new jobs in 1957 and revived depressed areas

HOW CAN you bring new industry to labor surplus areas? Pennsylvania says it can be done by businessmen, communities, and the state government working as a team.

In 1956, the state announced 448 new or expanded industrial projects. Of those, 72 involved reoccupation of idle plants. Last year, Pennsylvania reported 489 new projects. Some 103 of them included rejuvenation of idle plants.

Slowdown Begins—Need for new business in the state began when such leading industries as railroads and mining declined, creating labor surplus areas. Other industries grew, but not rapidly enough to take up the slack.

The state's growth fell below the national average in the early fifties. A 31 per cent increase in Pennsylvania's physical output between 1947 and 1956 was accomplished with only a 1.9 per cent rise in number of manufacturing workers. State population increased by almost 8 per cent in that period. During the same years, gains in manufacturing employment in the U. S. paralleled population growth.

Pennsylvania credits both industry and government for the gradual recovery in the last two years. Communities organized to raise funds, buy land, construct buildings, and attract industry. As a result, there are now 146 industrial development groups in the state, the Pennsylvania Commerce Department reports. Of these, 109 are actively seeking new industry.

The industry-government campaign is having "definite success," says the Commerce Department. Employment for 1957's industrial projects when in full operation is estimated at 33,675. New jobs created in 1956 numbered 28,571.

Help for Depressed Areas — A 1956 creation, the Pennsylvania Industrial Development Authority, is a state move aimed at assisting labor surplus sections. A public corporation, it loans money to community industrial development groups. Local agencies use funds to help finance construction of new industrial buildings. PIDA loans are made in areas which have had 6 per cent or more of the labor force unemployed for three years, or 9 per cent unemployed for 18 months.

Some 37 communities in 26 counties received PIDA loans between July 31, 1956, and July 1, 1958. In that period, the authority approved 54 loans amounting to $6.3 million. Communities and financial institutions are investing over $12 million in the same projects. Their goal is creation of 10,000 new jobs in distressed areas. At least 4000 of these will be in metalworking.

Export Prices Advance

U. S. Steel Export Co., New York, announced new prices, effective Aug. 12, in the wake of domestic price changes. New bases reflect the company's evaluation of U. S. Steel Corp.'s changes and its competitive position in export markets, company officials reported. Pipe discounts were revised.

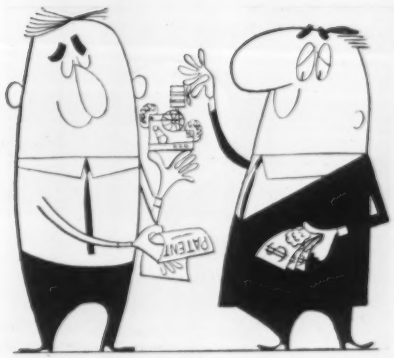
Changed prices (f.a.s. New York, Philadelphia, or Baltimore) include:

Billets, blooms, and slabs, rerolling quality, $87.67 per net ton.

Billets, blooms, and slabs, forging quality, $107.17.

Tube rounds, $130.84.

	Dollars Per 100 Lb
Hot-rolled bars, merchant quality	6.09
Hot-rolled bars, special quality	6.44
Std. str. shapes	6.04
CB bars, special quality	6.04
Plates	5.79
Floor plates	6.86
Sheet piling	7.00
Concrete reinforcing bars	5.76
Cold-finished bars	8.10
Hot-rolled sheets, 18 ga. and heavier	5.18
Cold-rolled sheets	6.36
Galvanized sheets	6.96
Vitrenamel sheets, 12 ga.	7.23
Electrical sheets, hot-rolled, cut lengths, 22 ga. electrical grade	12.88
Tight cooperage hoop	6.05
Wire Products	
Wire rods	6.57
Bright nail wire	8.18
Black annealed wire	9.03
Galvanized plain wire	9.71
Alloy Steels	
Hot-rolled bars	6.91
Hot-rolled bar shapes	7.25
Plates	7.98
Std. str. shapes	7.28
Cold-finished bars	9.21
High Strength Steels	
USS Cor-Ten:	
Plates	8.45
Std. str. shapes	8.53
CB sections	8.53
Hot-rolled bars	8.48
Hot-rolled bar shapes	8.71
USS Man-Ten R:	
Plates	7.09
Std. str. shapes	7.24
CB sections	7.24
Hot-rolled bar shapes	7.34
Abrasion Resisting Steel	
Plates	7.54
Hot-rolled bars & bar shapes	8.00
Hot-rolled strip	7.40



Employees have incentive to be creative, because . . .

Lear Inventors Get Cash

JOE ELECTRON and his fellow inventors at Lear Inc., Santa Monica, Calif., have received nearly $3000 from the company's patent award plan since it was started on May 30, 1957.

Joe is fictitious, but his experience is not.

Lear reports that since it began awarding money for patent applications and issuing patents under its award system, the influx of ideas and patent applications has nearly doubled.

Before an idea results in a patent application, it is carefully screened by the patent advisory committee in the originating division. Each division has a committee made up of the general manager, representatives of the engineering, sales, and contract departments. The chief patent counsel serves as secretary.

First Award—Joe's idea proved to be a good one, so he received his first check, for $25, when the application was filed.

If the idea was not Joe's alone, all reward money would have been split equally among the co-inventors.

Joe's second check, for $50, came when the patent was awarded.

No Reward Limit—If Lear sells or licenses the patent, Joe will get 10 per cent of the money until he has received $5000, and 5 per cent of the income thereafter until he has collected another $5000. After that, he will get 2.5 per cent until he has collected an additional $10,000, and 1.5 per cent from then on with no limit.

And Joe would continue to collect throughout the patent's life whether or not he stays with Lear.

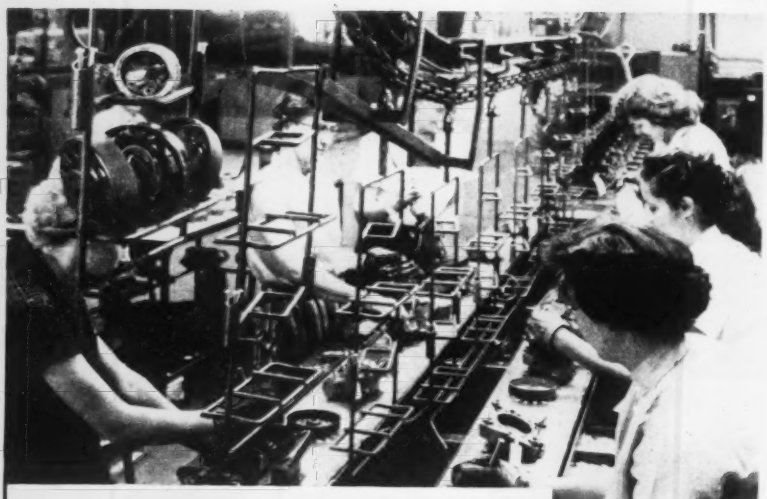
Plan Is Born—Harold J. Downes, Lear's chief patent counsel, conceived the plan in 1956. Patent plans of other companies such as Northrop Aviation, North American Aviation, Sinclair Oil Co., and Radio Corp. of America were studied by Lear's management, along with suggestions gleaned from interviews with inventors.

Lear's plan evolved as a tailored version of the best aspects of the other plans.

More Patents?—Because it takes two to five years from the application date to the issued patent, Lear does not know if the plan will result in more patents, but it is pleased by the influx of ideas and patent applications.

Lear now has about 200 patents, about half of which are inventions of William P. Lear Sr. (chairman).

Added Inducement — Inventions require more than an incentive. You must have creative personnel first. Lear hopes that its patent award plan will also prove to be an attractive advantage for work seeking engineers.



Motor Sales*

	Units	Dollars
Total 1958**	11,200,000	$150,000,000
First Half 1958*	5,494,500	73,000,000
First Half 1957	6,149,494	87,034,241
Total 1957	11,199,460	160,488,867

*Fractional motors covered by NEMA. Includes aircraft type motors and generators with frame diameters smaller than 8.5 in.; shaded pole and other types rated 1/30 hp, 1725 rpm and smaller; all others except hermetic and laundry equipment motors.
**Estimated by STEEL.
Source: National Electrical Manufacturers Association.

Mechanized setups like this mean faster deliveries and improved units

Motormakers Expect Upturn

MAKERS of fractional horsepower motors have felt the recession's impact, but the industry consensus is that fall will bring an upswing and that second half sales will be about 5 per cent better than those of the first six months.

Manufacturers expect the increase to result from a general upturn in business and a replenishment of "rock-bottom" inventories. The industry will sell about the same number of units this year as last, but dollar volume is expected to drop about $10 million under 1957's. Two reasons: 1. Fewer large units have been sold. 2. Prices are lower.

Disaster Areas — Major buyers (such as appliance makers, pump builders, furnace fan manufacturers, and makers of air conditioners) all ordered less in the first half than during 1957's first six months. One motormaker sums up the first half this way: "We noted distinct drop-offs in domestic refrigerators and freezers; heating, cooling, and compressing products; room air conditioners; condenser fans; business machines; portable tools, and aircraft. Business has been a little better in health machines, evaporative coolers, and window fans."

Prices have been weak for the last year and the industry's present competitive situation seems to rule out an increase, at least for some time. Here's how one company sums up the problem: "Motors are being sold at prices below those of 1951. In a situation like this, it is almost impossible for cost reduction programs and increased productivity to keep up with higher costs of materials and labor."

Innovations — The number of makers swinging toward highly mechanized production lines is growing. Result: Quicker delivery of most standard units, greater range of selection, and more economies for buyers.

One Illustration — Last year, Westinghouse Electric Corp. opened a plant at Upper Sandusky, Ohio, to make shaded-pole and permanent-split capacitor type units. Motors are made in five basic component production lines: End bells, laminations, shafts, stators, and rotors. The major lamination and shaft lines are automatic—the others are highly conveyorized and mechanized. As assembly conveyor passes the end of each component line, picking up completed parts. By the time the conveyor passes over final assembly worktables, two complete sets of motor parts are on each rack of the conveyor (see photo).

General Electric Co. reports that on some of its units, steel entering the punch presses goes through the entire automated production cycle in three days.

Distribution — Some problems have already been solved, but motormakers admit that stiff competition keeps them looking for simpler ways to get motors from factories to consumers. One example: A medium-sized midwest firm (which formerly sold through agents) is building its own distributor marketing organization.

Services — Customer-oriented innovations designed to boost business and give the buyer more for his money generally take the form of product testing, technical consultation, and quicker delivery. Says one manufacturer: "With a relatively stable market and product, it seems that this is about the only way left to obtain additional business."

New Products—Industry experts

expect a steady flow of new and improved motors as makers step up efforts to woo customers. Early this year, General Motors Corp. introduced a shorter, lighter appliance motor and a redesigned fan motor. Another major manufacturer soon will unveil changes in his line that will "enable users to reduce assembly and maintenance costs in over 1000 applications."

Technology—Jack & Heintz Co. echoes the industry consensus when it says the trend toward smaller frame sizes (more compact units delivering more power) is accelerating. J&H says No. 48 frame size is supplanting No. 56 wherever possible.

Says GE: "The trend in appliance motors is towards shorter units. Two developments that are distinct possibilities within the next two years are an external relay (instead of internal centrifugal switches) and low-cost overload protection built into all motors."

Motor standards are under continual revision by the National Electrical Manufacturers Association, New York. For a nominal charge, NEMA will supply any company with standards covering specifications for: Frame nomenclature, mounting frame dimensions, standard voltages, shaft height, shaft extension dimensions, and others.

Copperweld To Expand

Copperweld Steel Co., Pittsburgh, will spend $1.3 million for the installation of plant facilities at Glassport, Pa., to make its new Alumoweld wire and strand.

The process: A thick cladding of aluminum is applied to steel by an "atomic" weld using heat and pressure. When the bimetallic rod is drawn into wire, the product is composed of 25 per cent aluminum by area. Alumoweld retains its firm weld and one-metal quality when drawn into wire, says James M. Darbaker, Copperweld's president.

These product advantages are listed by the company: Better corrosion resistance, better conductivity, lighter weight, and permanent high strength. Applications include: Power conductors, overhead ground wires, core wires in ACSR, and guy and messenger strand.

Nuclear-powered Nautilus surfaces after . . .

Atom Conquers Polar Ice

AMERICAN industry will enjoy an expanding nuclear market, while Russia has additional cause to worry about American advances in atomic development. Those are two results of the history-making voyage of the *Nautilus* beneath the North Pole, repeated by the *Skate*.

Undersea tankers are a possibility in ten years. General Dynamics Corp.'s Electric Boat Div., Groton, Conn., builder of the *Nautilus*, is studying the possibility of building such ships. Aerojet-General Corp., Azusa, Calif., is working on the design of a subsurface carrier for the Maritime Administration.

Navy Plan — Here's how the American atomic submarine program stands: The *Nautilus*, *Seawolf*, and *Skate* are veterans.

Two — *Sargo* and *Swordfish* — were launched in 1957. *Swordfish* is being fitted for sea duty. *Sargo*, launched Oct. 10, 1957, finally made her maiden voyage on Aug. 3.

Sargo, a smaller, more maneuverable version of the *Nautilus*, is a sister ship of the *Skate*. Her propulsion plant was designed and built by the Bettis laboratories of the Atomic Energy Commission, Pittsburgh, operated by Westinghouse Electric Corp.

New Family Additions—By the end of this week the fleet will number seven. The *Seadragon* was scheduled to be launched at Portsmouth, N. H., yesterday. Another, the *Triton*, will be launched at Groton, Conn., tomorrow.

Congress has made appropriation for nuclear-powered submarines much larger than the *Nautilus*. The first will be ready in late 1960 or early 1961. General Dynamics, Ingalls Shipbuilding Corp., Birmingham, and naval shipyards built subs authorized through fiscal 1957.

Thirteen more atomic submarines are under construction. Contracts have been signed for nine others.

Why Is Atlas Production So Slow?

THE SAD SHAPE of our ICBM program came to light in testimony before the House Astronautics & Space Exploration Committee, chaired by Rep. John McCormack (D., Mass.).

Revealed Dr. Hugh Dryden, director, National Advisory Committee for Aeronautics (which will form the nucleus of the new National Aeronautics & Space Administration): If his group ordered Atlas missiles today for space experiments, it wouldn't get delivery in less than 9 to 12 months "without diverting missiles from the military ICBM program." His implication: It takes nearly a year to assemble an Atlas and we don't have any going into inventory yet. They're being consumed in Cape Canaveral test programs as fast as they're built. And those tests, at best, come off only about once a month. The administration still claims the Atlas will be operational by the end of next year.

Can't We Speed Up Our Space Program?

NACA came before the House committee requesting $47 million for NASA. About half will go for capital equipment; the rest for buildings and land. The fiscal 1959 budget also calls for about $80 million for space research, for $117 million to be transferred to NASA from the Defense Department's Advanced Research Projects Agency, and for $101 million from the NACA when it is formally enveloped into NASA. Another $400 million or so of space money is obligated to ARPA, most of it for Lockheed's reconnaissance satellite.

Questioned closely by Rep. James Fulton (R., Pa.) on how to speed up our space program, Dr. Dryden reported obligations to NASA could be doubled or tripled later, but it has all the money it can use now. The agency has scheduled the money through fiscal 1959; a satellite with a 700-lb payload is included. It will be "some years," he said, before we match the Russian's 2900-lb sputnik. Our program is "most decidedly not a crash program," he concluded.

His point: We wouldn't know how to develop true space weapon systems today if we had the money to build them. He suggested the ICBM program is of much more concern to him than the space program. While many space programs have been suggested, they all involve a gamble that he is not willing to risk because most of them would cost over $100 million.

Industry Is Doing the Job Itself

Serious observers of the scene fear the new space agency is being born in an atmosphere of bureaucratic lethargy which will eventually smother any of the big plans private industry has laid before the Pentagon and the White House. Even if Congress votes additional money, there is no assurance, they believe, that it will be spent with imagination. These "reasonable first steps" of Dr. Dryden's may be mouselike compared with Russia's giant strides. Each day we fail to close the gap is lost time which cannot be regained.

Like private efforts to develop a missile program in the 1940s, some firms are now staking a larger part of their corporate future on spacework: Republic Aviation is an example. While announcing sharply reduced sales and earnings in the second quarter, it reported a $35 million program for transport aircraft capable of 2500 mph speeds, material and structural research, and missile and space research.

Besides such formal programs, don't forget the millions of engineering hours being spent at Convair, North American, Lockheed, Goodyear, and many other firms on proposals for research—most of which just gather so much dust at the Pentagon.

Patent System Criticized

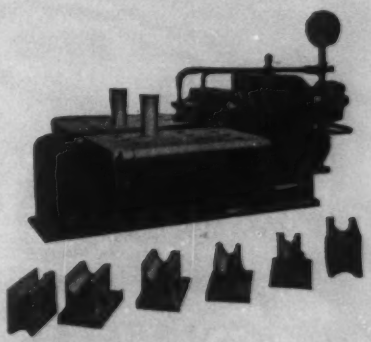
Talk on Capitol Hill of granting national awards to deserving young scientists received some encouragement from a recent report—for Sen. Joseph O'Mahoney's (D., Wyo.) Patents Subcommittee—by Prof. Seymour Melman of Columbia University. He recommends "a system of public honors and awards" in place of the patent system, because today's breakthroughs are usually made by teams of scientists and engineers, rather than individuals. Independent inventors wouldn't necessarily be harmed by the procedure, he says, because they could also participate in the awards. Indeed, individuals might gain more than through the patent system. Some top work done in World War II has yet to be recognized by patents because of the secret nature of the programs.

Jet Age Airports Are Lacking

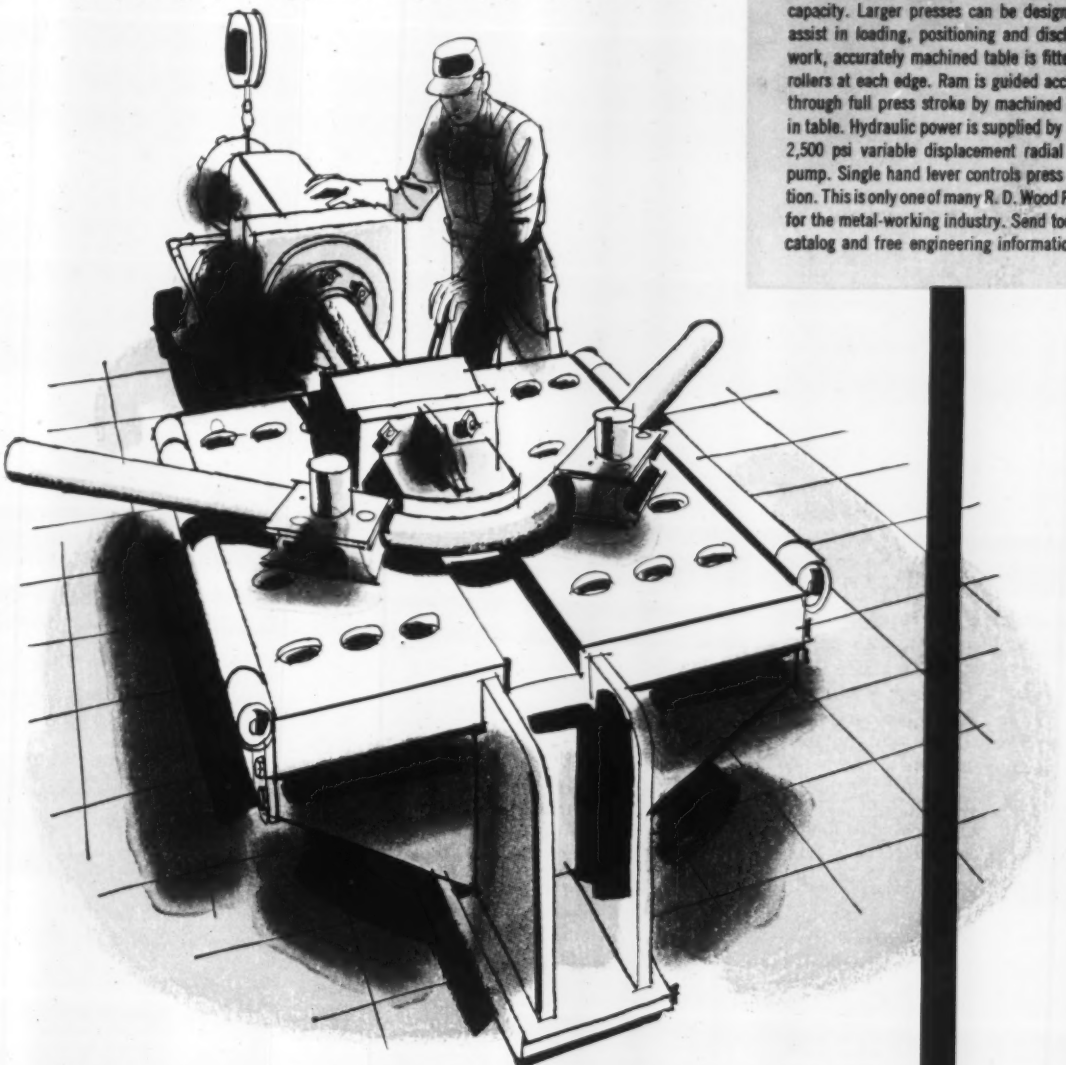
Only 12 to 15 of the nation's airports have adequate ground handling equipment for the nonstop flights of jet passenger planes scheduled to begin this fall. By 1960, the Air Transport Association expects that half to two-thirds of our present piston fleet will be retired in favor of jets. (Last week, American Airlines ordered 50 jets for delivery in 1960-61; they'll cost $135 million.)

How to save money on your next press: apply your specs to a basic R. D. Wood design

The result will be exactly *what you want*—just as surely as if you had it designed from scratch. And its cost will be much lower. Working with numerous basic models, R. D. Wood engineers can save considerable design time and expense, and still incorporate *your* specifications in the finished machine. You're sure of its quality, too. For every Wood Press is built by experts using selected materials. This brings additional saving from smooth, dependable performance; fast, economical production; trouble-free operation. *Before* you begin planning your next hydraulic press, consult Wood.



R. D. Wood 25 ton capacity, heavy-duty horizontal press for cold bending steel or copper pipes and tubes. Handles 1½, 2, 2½, 3, 3½, and 4" sizes with standard bending pins, forms and dies. Other sizes are available up to 200 tons capacity. Larger presses can be designed. To assist in loading, positioning and discharging work, accurately machined table is fitted with rollers at each edge. Ram is guided accurately through full press stroke by machined groove in table. Hydraulic power is supplied by 3 gpm, 2,500 psi variable displacement radial piston pump. Single hand lever controls press operation. This is only one of many R. D. Wood Presses for the metal-working industry. Send today for catalog and free engineering information.



R. D. WOOD COMPANY

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Improve Monday morning efficiency—switch to STUART SOLUBLE OILS with guaranteed longer service life!

Anaerobic bacteria (present in practically all machine shops) thrive in your water-mix cutting and grinding fluids and generate that expensive perfume known as "Monday Morning Odor." Expensive because it's a sure sign the stability of the compound is being damaged—service life shortened—and because your workers' efficiency is bound to suffer.

So regardless of your experience with other bactericides, it will pay you to try Stuart's heavy-duty soluble cutting and grinding compounds with the anaerobic bacteria inhibitor that's *guaranteed* to keep the emulsion stable and sweet three to four times longer than other water mixtures . . . even in hot weather and through long shutdowns when bacteria multiply fast.

LONGER SERVICE LIFE GUARANTEED

Talk the problem over with your Stuart engineer and place a trial order for Solvol "X," Codol "X," Dasco Super Soluble "X" Base, or new general-purpose Dasco D-20—whichever of these top-quality, heavy-duty cutting and grinding compounds best fits your needs. D. A. Stuart Oil Co., Limited *guarantees your complete satisfaction* with the bacteria resistance of these compounds, on a money-back basis! Phone your Stuart Service Center . . . before "Monday Morning Odor" hits your plant for another efficiency loss.

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Arrange now to test Stuart's water-mix cutting and grinding fluids on your difficult machining jobs.

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METALWORKING LUBRICANTS

Intra-European Trade Is Increasing

FTA Total Exports		FTA Total Imports	
1948	**$16.3 billion**	**1948**	**$23.5 billion**
Intra-European	**7.5 billion**	**Intra-European**	**7.4 billion**
U. S. & Canada	1.2 billion	U. S. & Canada	5.5 billion
Asia	1.4 billion	Asia	1.3 billion
Africa	2.0 billion	Africa	2.1 billion
Latin America	1.2 billion	Latin America	2.3 billion
Other	3.0 billion	Other	4.9 billion
1956	**$35.5 billion**	**1956**	**$40.7 billion**
Intra-European	**18.6 billion**	**Intra-European**	**18.5 billion**
U. S. & Canada	3.4 billion	U. S. & Canada	6.5 billion
Asia	2.9 billion	Asia	2.4 billion
Africa	3.6 billion	Africa	3.7 billion
Latin America	2.8 billion	Latin America	2.8 billion
Other	5.1 billion	Other	6.8 billion

*Free Trade Area includes Western Germany, France, Belgium, Luxembourg, the Netherlands, Italy, Great Britain, Sweden, Norway, Denmark, Austria, and Switzerland.

European Market: Integration Planned by 1973

WESTERN EUROPE is moving toward economic integration, but even the most optimistic European industrialists expect it to take about 15 years for a unified market to become a practical as well as a legal reality.

A booklet published by the Chase Manhattan Bank, New York, points out that the maximum target date is Jan. 1, 1973. Six nations (West Germany, France, Belgium, Luxembourg, the Netherlands, and Italy) have signed a treaty setting up the European Economic Community. Negotiations are underway to link them with Great Britain and other Western European countries in a Free Trade Area (see table).

Wise U. S. businessmen will not ignore the trend.

Here's Why — The nations in question produced goods and services in 1956 equal to about two-thirds the U. S. total. Since 1950, the Western European economy has been expanding at an average annual rate of nearly 5 per cent (vs. a 4 per cent yearly growth in postwar U. S.). It conducts one-third of the world's total trade and takes half of all U. S. exported food and tobacco, textile fibers, and petroleum products. It also gets nearly one-fifth of all machinery exported by this country.

Western Europe is important. Here's what economists think an integrated European economy may mean to U. S. business: It could become an even greater market than it is now for many U. S. exporters (particularly raw materials and certain farm products). But most manufactured products are going to encounter much stiffer competition.

Dollars Are Important — U. S. shipments depend to a great extent on the number of dollars made available to the rest of the world. That will remain unchanged. But the success of an integrated European economy (with high tariffs on U. S. goods) will result in preference being given to goods produced in Europe.

Nearly three-quarters of all U. S.-to-Europe shipments are raw materials and food products. They will still be needed—don't look for tariff barriers here. About 26 per cent of U. S. exports to Europe consist of manufactured goods, particularly machinery and chemicals. They will be hit with substantial tariffs at the same time that most internal European tariffs drop to zero.

In addition, U. S. companies now operating in Europe may need to reconsider their locations, products, and scale of operations in the light of different market conditions. Some firms now exporting to Europe may find it wise to set up subsidiaries, or to license their products. Still others may find new markets there for goods not now being exported.

U. S. Private Investment — But don't forget: The aspects of the Common Market that serve to curb some U. S. exports will stimulate the flow of American money into the area. (Total U. S. private investment in Europe was close to $4 billion by the end of 1957.)

Here's why a spurt in U. S. investment can be expected: Some companies will have to set up production in Europe to protect their markets. The prospect of a unified European market is also likely to attract firms solely because they realize the new conditions offer an opportunity for profit.

PIERRE ETIENNE BESIER
Director, Renault Machine Tool Div.

Prison Camp Planning Gives France Automated Factories

HOW to keep from going "stir crazy" in a dreary German prison camp. That was the problem faced by a young French engineer captured by the Wehrmacht in 1940.

His solution: Plan the postwar reconstruction of his company's plants, destroyed in successive bombings.

The result: One of the most automated automobile plants in the world.

Something To Hold To—The man was Pierre Etienne Besier, a tool engineer for Renault before the war and later an officer in the French Army. Captured when the Germans overran France, he was taken to a prison camp near Hanover. As an officer, he was not required to work. There was nothing to do. He watched fellow officers deteriorate in the hopelessness of prison camp idleness.

Pierre realized he had to have something to do. He decided to think about rebuilding the Renault plants after the war.

Mental Blueprints—His equipment consisted of a stub pencil and tiny scraps of paper he could scrounge—matchbook covers and an occasional cigaret wrapper.

Step by step, he planned for new machines to build the postwar Renault and devices to move the work from one machine to another.

Liberated in 1941, he returned to Paris and wrote his plans in longhand, including freehand drawings and formulas. Then he waited for the war to end.

Ready—In 1945, peace returned and France was ready to start reconstruction. For Renault, the 400 pages of Pierre Besier's planning became the guide. By 1947, the plant was turning out its first special machines. M. Besier and his associates prepared blueprints for 200 special tools, including transfer machines. From April to December, they built and set the 200 specials and Renault was in business again.

For Renault:

WATCH for more French cars on American highways. France has discovered America—as a market for small automobiles—and plans to exploit it.

Her chances for success are enhanced by two automated plants in the suburbs of Paris—at Billancourt and Flinns. Aided by relatively low labor rates and some advantages in material costs, Renault is able to sell its four-passenger sedans for under $1700 at U. S. ports. The company is exporting 200 cars a day to this country, and expects to increase shipments.

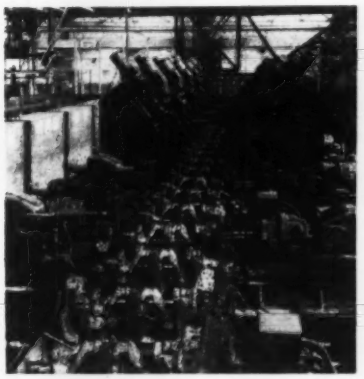
Surprise—The extent of automation in the Renault plants would astonish most American industrialists. Most machines and transfer devices were designed for processing Renault parts and were built in the firm's machine tool shop, which was established by necessity immediately after World War II. The company had no dollars to buy machines from American builders; transfer machines were not available at the time; and the size of the Renault parts required smaller machines and smaller heads.

Today, the machine tool shop has 1800 employees, builds most of Renault's machines, and supplies some to other French and continental industries. Renault rates No. 6 among French machine tool builders.

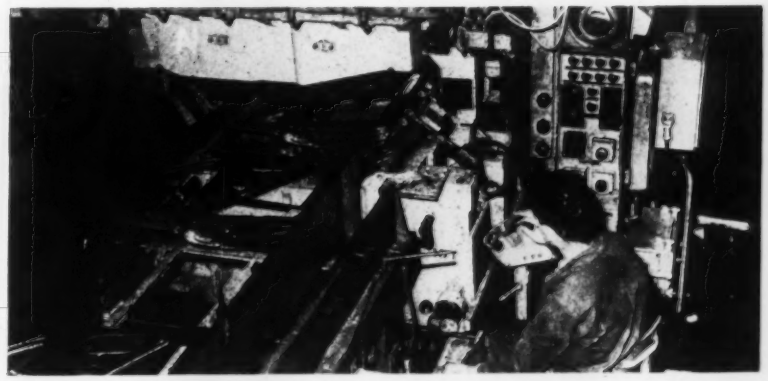
At Billancourt, a line of transfer machines does 725 operations on engine cylinder blocks and delivers 100 finished blocks per hour. The entire department employs only 35 men to set and change tools—only five ever touch the parts.

Simple—Renault machine tools use screw feeds where speed is important. Otherwise, they use compressed air. Renault engineers contend it makes for easier maintenance and saves space. Switch gear for Renault transfer machines are small enough to be placed in the machine housings and control cabinets are conspicuous by their absence. Pierre Besier, director of Machine Tool Div., predicts a world-

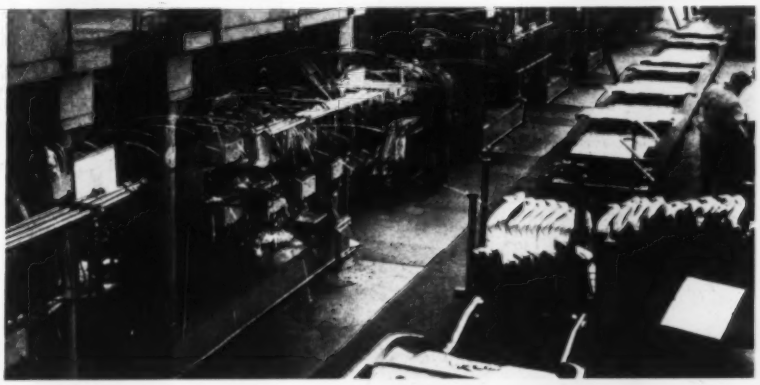
Automation Opens Way to World Marts



Palletized transfer line processes crankshafts at Renault-Billancourt



Doors for the Renault Dauphine are stamped on automatic press line at Flinns. Workpieces are carried through eight to ten press stations by mechanical handling



More than 120 spotwelds are made automatically to assemble a Dauphine floor. Rail carriages with underground back motion carry and position the workpiece

STEEL Editor Walt Campbell watches body drop at Flinns assembly line

wide trend to pneumatics in the next decade.

At Flinns, many assembly operations are automated. Press lines compare favorably with the most modern American lines. Parts are carried automatically through lines of eight or ten presses.

Spotwelding of floors is automatic, with 120 welds made simultaneously.

Other fastening and assembly operations are being automated on a station basis. The assembly line has synchronized manual and automatic operations side by side.

Praised by Ford—The Flinns factory has been described by D. J. Davis, Ford Motor Co. vice president for manufacturing research, as one of the most automatic in the world.

Electronics is used in many applications. In addition to measuring devices, accessories for welding gear, induction heating equipment, and photoelectric safety devices, the company uses an electronic speed changer for grinders that process roller bearings. Renault recently took a patent on a device which automatically controls the cycle of a running machine from the variations of a gage running at low pneumatic pressure.

Renault decided against large scale use of electronic devices on its special machines. They work on sequence automation (all or nothing) and generally operate at a constant speed. Control is based on switches and mechanical relays operated electromagnetically.

Seventh Automaker—Renault employs more than 60,000. Last year, the company produced 337,000 vehicles and ranked seventh among world automakers. Renault also produces trucks, agricultural tractors, diesel locomotives, subway cars, machine tools, and some steel.

Assembly line workers receive about $120 a month, draftsmen and junior engineers about $180. Fringe benefits are high in relation to wages—they amount to 58 per cent of the total payroll.

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the more you need HYATTS . . . because nothing can touch the straight cylindrical roller bearing for downright load-carrying capacity and longer life in rugged applications like this heavy-duty tractor.

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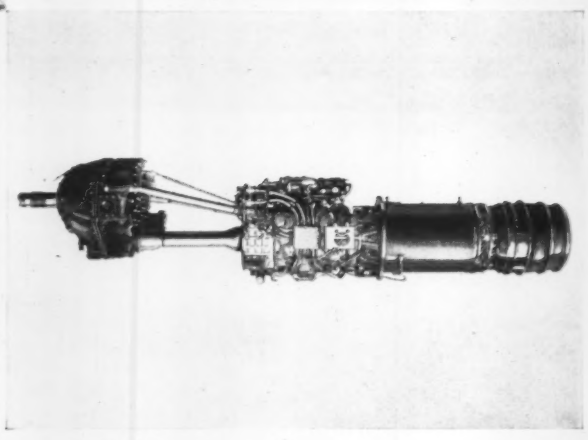
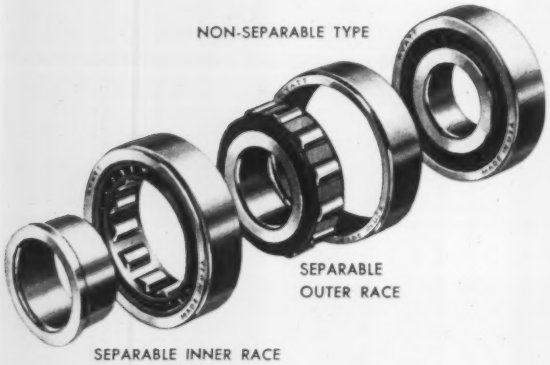


THE MORE YOU NEED *Cylindrical* HY-ROLL BEARINGS



If you're like many engineers today, often faced with the problem of fitting heavier loads and higher speeds into smaller housings, HYATTS are your answer! You'll find your problems solved with bearings like the shouldered-race HYATT Hy-Rolls that handle rugged radial loads along with a surprising amount of thrust. You can save added space, too, by eliminating the outer or inner race of separable HYATTS, and operating the rollers directly on the hardened and ground shaft or housing bore. Check your nearest HYATT Sales Engineer for recommendations on your particular problems today! Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.; Pittsburgh; Detroit; Chicago; and Oakland, California.

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1908–1958 GM FORWARD FROM FIFTY

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FOR MODERN INDUSTRY

Detroit Set for Rugged '59

The auto companies hope for a better year than '58 but are getting prepared for anything. Here are some of the often overlooked moves they are making

RECENT ACTIONS in Detroit indicate autodom expects a recovery year which may not be spectacular but considerably better than 1958. This year's sales are expected to be 24 per cent under 1957's.

Cutting through new model announcements is a flock of management reorganizations and other moves aimed at tightening operations. A company by company roundup shows what's happening.

AMC Sets '59 Schedules

Going into the 1959 season with restyled rear fins, grilles, and lights, American Motors Corp. has set an initial production schedule of 203,000 units for its fiscal year, reliable sources report. An estimated 165,000 units will be built and sold in 1958.

Since AMC's breakeven point next year should be about 112,000 vehicles, meeting the projected schedule would bring the Automotive Div. a net profit of some $40 million. This year the automotive group is expected to earn $22 million to $23 million although the company's fiscal net earnings will be only around $16 million because of losses in the Kelvinator Div.

S-P Studies New Management

Studebaker-Packard Corp., South Bend, Ind., is considering a diversification program so it can use up its $134 million tax loss. The company's first half statement reveals a $13.3 million net loss on $70.6 million in sales. In the same period last year, S-P had sales of $105 million and a net loss of $6.8 million.

A. M. Sonnabend, president of Hotel Corp. of America, has been asked to take a place on the board and head up the program.

It looks like any plans for diversification would use Studebaker's economy car as a base for an automotive operation. This vehicle will be the mainstay of S-P's 1959 line. Harold Churchill, S-P's president, is quick to point out that it is not a small car, but one which will be economical. According to motordom talk, it will have a 108-in. wheelbase, over-all length of 175 in., and will be powered by Studebaker's 101 hp, 6 cylinder engine.

Won't Confirm—While S-P can't admit it officially, Packard will be gone next year. Apparently, the big Studebakers and the low priced Scotsman will be too, but the firm still plans to keep one of the sporty Hawk series and may keep some of the other names for its economy line.

If Mr. Sonnabend can be persuaded to take an interest in S-P affairs and if the desired financial reorganization comes off, chances are Curtiss-Wright won't pick up its option on 5 million shares of S-P stock. The option expires Nov. 6, and C-W's management advisory agreement runs out a year later. Curtiss-Wright may try for a continuation of the marketing arrangement under which S-P is selling the Mercedes-Benz in the U. S.

Chrysler—Holding On Until '59

Chrysler reported a $25 million net loss at the half and now shows a 55 per cent drop in passenger car production over the first seven months (370,359 against 821,585 through July, 1957).

Its 1959 cars are relatively unchanged—particularly when compared with General Motors' styling moves. Plymouth has the biggest facelift, and Chrysler lines will look slightly different in the fin and grille areas. But the company does not think the changes are drastic enough to give it a substantial boost next year.

Keeps Competitive — Chrysler's purchase of 15.2 per cent of the stock of the French auto firm, Simca, has brought it into the small car field. Company officials privately admit that the acquisition is aimed primarily at bolstering Chrysler's appearance in the world market. It doesn't expect much in the way of revenue on Simca products in the U. S. although it will try to compete with GM and Ford imports. Byron Nichols, Chrysler's group vice president-automotive sales, reports a nationwide sales and service organization for Simca cars has been formed. The corporation is

1959 Autos Use More Aluminum

(pounds per car average)

	1959	1958
Chevrolet	42.3	34.9
Ford	50.9	41.9
Plymouth	61.7	59.5
Pontiac	52.9	50.0
Oldsmobile	70.6	62.9
Buick	73.8	70.2
Dodge	64.2	60.7
De Soto	102.3	94.3
Edsel	67.3	66.8
Mercury	56.5	55.4
Rambler	53.4	54.9
Studebaker	26.2	26.2
Cadillac	79.7	78.7
Lincoln	91.8	97.7
Imperial	131.5	135.2
Chrysler	116.3	111.3
Average	57.1	50.0

Figures include scrap. Source: Kaiser Aluminum & Chemical Sales Inc.

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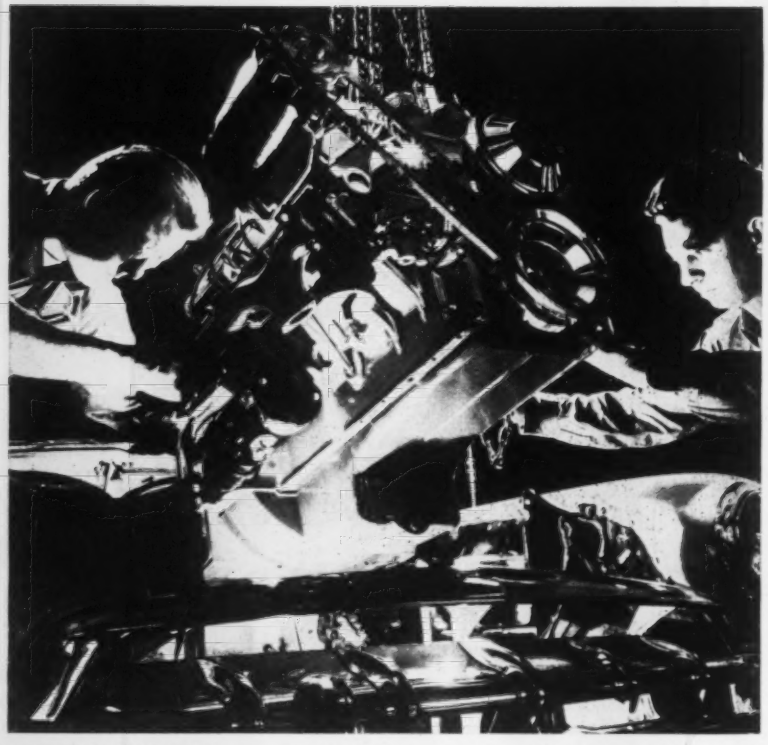

ALUMINUM ENGINES for tomorrow's cars mean greater efficiency and 30 per cent less weight than cast iron types. This General Motors prototype is being installed in a test car. The engineering staff says laboratory and road tests were successful

proceeding with a crash program for an economy type car which is reported to look like a miniature Imperial.

Ford—Shifts Continue

Sweeping styling changes in GM cars will be tough for revamped Ford lines to meet. Despite fairly large scale sheet metal changes, all but the Fords still resemble 1958 models. The company is again realigning its M-E-L (Mercury-Edsel-Lincoln) sales group to prepare for a grueling season.

James J. Nance, Ford vice president and M-E-L's general manager, says: "We are organized to provide concentrated management attention to each of our five separate car lines while retaining the advantages and efficiencies of a single top level administration." C. E. Bowie, general sales manager, will be responsible for basic marketing concepts the division will start. One area that will receive more attention next year will be leasing and fleet sales. L. C. Beebe, sales service manager, will head up the operation under Mr. Bowie's direction.

Quick Switch—Ford has switched its pitch on the Edsel since the time it confidently predicted the car would sell 250,000 units its first year. Mr. Nance says Edsel has sold more than 50,000 units in the first ten months of 1958 and—as the story now goes—"this approaches a record for cars in their first year."

The division still intends to drop the two top series although it may retain the names on other models. "Continental Mark IV will be introduced later this year as a successor to the Mark III which made its debut in 1958," adds Mr. Nance. Mercury delivered 14,763 cars during July, the best sales month for the line since last October. In the first seven months, Ford built 673,573 passenger cars, vs. 1,169,725 cars through July, 1957.

While the company hasn't said so officially, the talk around Detroit is that the first half earnings statement ($5.4 million net, vs. $171 million in 1957's first half) has triggered another salaried personnel cut in general administration groups. The pruning is reportedly being made on the basis of lists built up last May when each department head ranked his people in the order of their importance—not seniority. The slash, supposedly 25 per cent, seems to be hitting production engineering and quality control groups hardest.

GM—Faces Banner Year

Mr. Big in autodom wouldn't object to taking 60 per cent of the 1959 car market, and with its restyled models stands a good chance of doing it. Some GM sources still claim the corporation doesn't want too much business because it fears antitrust action, but Detroit thinks it's far more likely that GM will sell cars first and worry about Uncle Sam later. Currently, it is accounting for 54.5 per cent of industry output. Through July it has built 1,385,025 passenger cars. Last year, it produced 1,770,878 in the same period.

October Premiere—As reported in STEEL on May 12, GM will publicly introduce its 1959 lines at the New York Motorama which opens Oct. 16. The company is pitching for a return to solid colors. At least one of its divisions has cut the number of color options from 3390 to 25.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
7 Mo. Total	2,562,903	3,868,517
August	.....	524,354
September	.....	284,265
October	.....	327,362
November	.....	578,601
December	.....	534,714
Total	.....	6,117,814

Week Ended	1958	1957
July 12	73,062	111,943
July 19	85,533	117,205
July 26	85,519	119,857
Aug. 2	62,846	119,323
Aug. 9	66,085†	118,864
Aug. 16	60,000*	117,598

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

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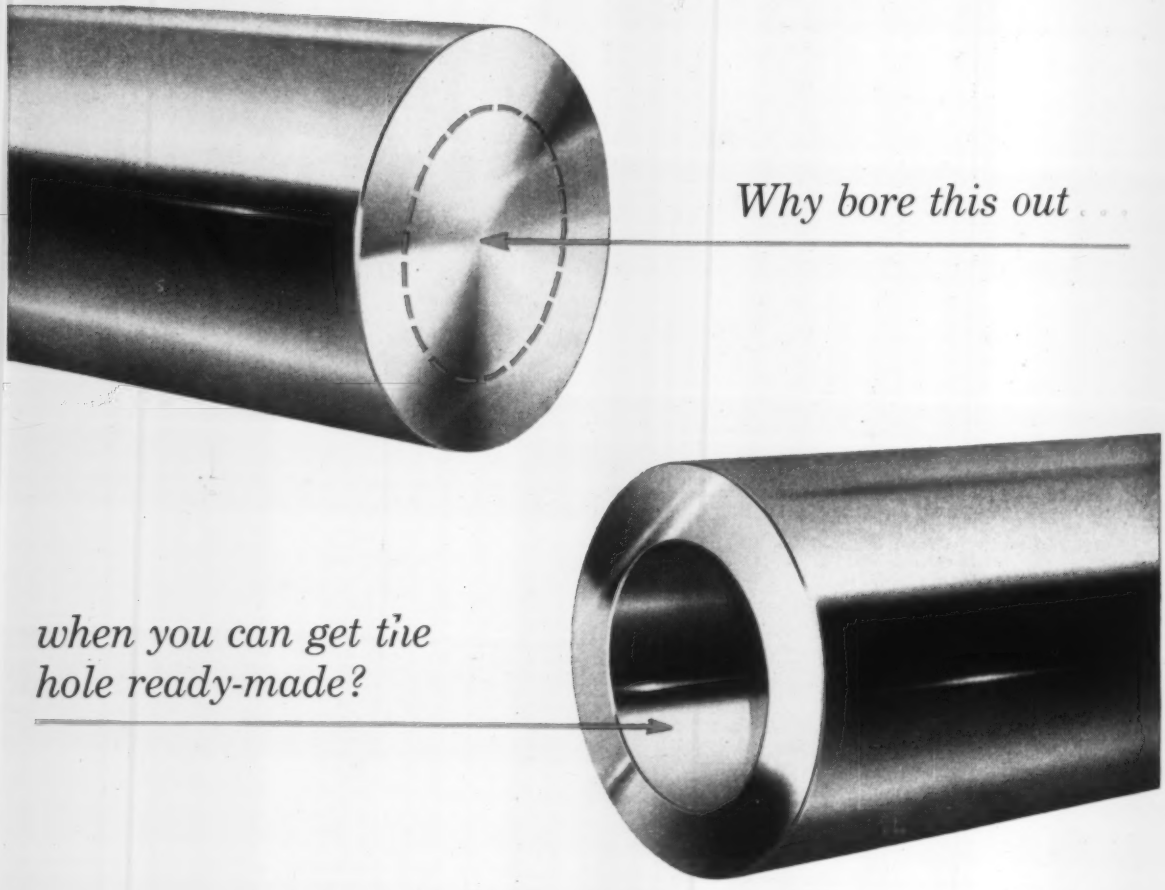

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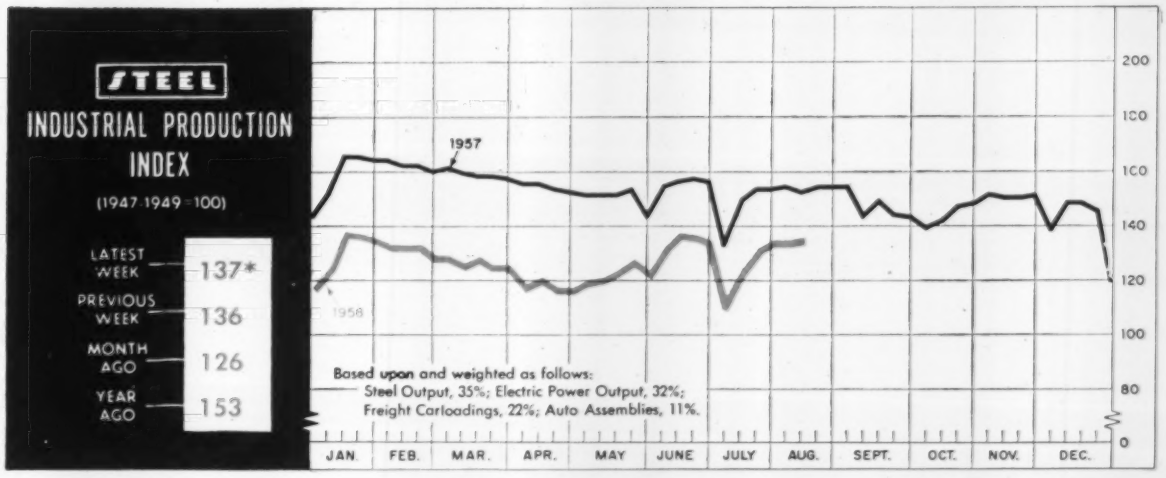

Week ended Aug. 9.

Auto Industry Expected To Lead Upturn

TODAY, (Aug. 18) the automotive industry starts the transition from a contractive business force to an expansive one. This will mark the turn in one of the mildest summer business slumps in several years. The only factor endangering the continuation of the upward trend into the fall and winter is a possible strike against the auto companies.

Auto and truck production is running about 80,000 units a week. It may get lower than that before the full effects of new models can be felt. The two biggest producers—Chevrolet and Ford—are supplying '58s at the fastest pace since March. During the week ended Aug. 9, they accounted for about 53,000 of the total output of 66,085 passenger cars. There has been no definite word about when they will change over.

Rehiring Starts — The significant point is that today production of 1959 models gets underway at Buick, to be followed soon by all Chrysler Corp. divisions except Plymouth. By the first week in September, Plymouth, Pontiac, and Oldsmobile will be in the '59 fold.

General Motors Corp. says it will recall more than 100,000 hourly workers by mid-October. More will be added in November, bringing GM's total production force to about 325,000. Ford Motor Co. is expected to recall about 40,000 workers by early November. Chrysler started today to recall 43,000.

Cause and Effect—Even though auto output is at a low ebb, the industry is partially responsible for the surprisingly firm tone of business during most of the summer. Suppliers have been busy for several weeks building up stocks of parts for late third quarter and fourth quarter use in autos. Steel orders have helped the mills keep the operating rate from falling as far as many had feared prior to July 4.

This firmness is evident in the industrial production index trendline charted above. The index advanced

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,656[1]	1,586	2,062
Electric Power Distributed (million kw-hr)	12,500[1]	12,619	12,070
Bituminous Coal Output (1000 tons)	7,770[1]	7,900	9,638
Crude Oil Production (daily avg—1000 bbl)	6,550[1]	6,545	6,797
Construction Volume (*ENR*—millions)	$513.9	$388.0	$298.3
Auto, Truck Output, U. S., Canada (*Ward's*)	81,443[1]	80,374	137,143
TRADE			
Freight Carloadings (1000 cars)	625[1]	622	740
Business Failures (Dun & Bradstreet)	271	264	281
Currency in Circulation (millions)[3]	$31,170	$31,086	$30,983
Dept. Store Sales (changes from year ago)[3]	+3%	+3%	−1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,549	$21,667	$21,102
Federal Gross Debt (billions)	$274.6	$275.9	$271.9
Bond Volume, NYSE (millions)	$30.4	$27.3	$16.3
Stocks Sales, NYSE (thousands of shares)	18,523	18,760	9,422
Loans and Investments (billions)[4]	$93.5	$93.8	$86.4
U. S. Govt. Obligations Held (billions)[4]	$32.0	$32.1	$25.2
PRICES			
STEEL's Finished Steel Price Index[5]	245.03	239.15	239.15
STEEL's Nonferrous Metal Price Index[6]	199.4	199.4	214.3
All Commodities[7]	119.3	119.4	118.1
Commodities Other than Farm & Foods[7]	126.1	126.0	125.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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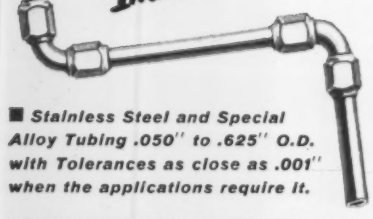

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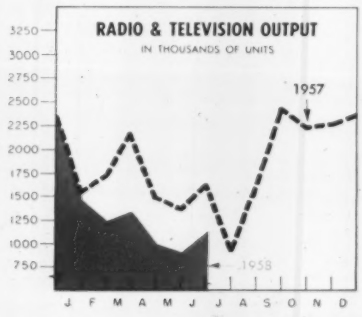
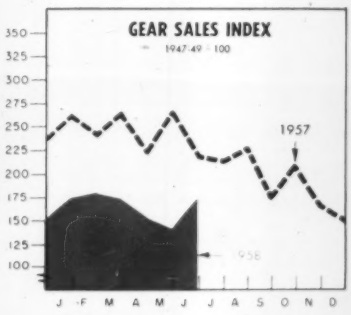
THE BUSINESS TREND





	Radio		Television	
	1958	1957	1958	1957
Jan.	1,027	1,086	434	450
Feb.	878	1,265	370	465
Mar.	931	1,609	417	560
Apr.	697	1,116	303	361
May	655	1,024	267	342
June	774	1,088	377	544
July	....	613	....	360
Aug.	....	966	....	674
Sept.	....	1,611	....	833
Oct.	....	1,569	....	662
Nov.	....	1,689	....	575
Dec.	....	1,793	....	574
Totals	....	15,429	....	6,400

Electronic Industries Association.

	1958	1957	1956	1955
Jan.	174.5	259.3	245.5	140.9
Feb.	179.1	239.5	256.2	148.5
Mar.	173.7	262.4	276.5	172.8
Apr.	153.2	221.7	264.7	179.8
May	142.2	263.2	275.6	205.2
June	173.8	215.9	245.4	193.5
July	....	211.4	286.7	201.7
Aug.	....	225.8	219.5	217.6
Sept.	....	174.9	230.5	246.5
Oct.	....	207.0	299.8	227.6
Nov.	....	165.3	216.2	210.4
Dec.	....	150.8	235.7	245.5
Avg	....	216.4	254.4	198.3

American Gear Mfrs. Assn.

Charts copyright, 1958, STEEL.

one point to a preliminary reading of 137 (1947-49=100) for the week ended Aug. 9, on the strength of greater electricity output, higher steel operating rate, and increased freight carloadings. The average for August should end up only slightly under the June figure.

Watch September — September should provide a clue to the extent of the upturn. By the middle of the month, STEEL's index should have regained all the ground lost over the Labor Day week and be heading up. If the auto industry and the union can come to terms without a strike, this will happen. If there is a strike, chances are the recovery will be delayed, but once the strike is settled, the upturn will become intensified.

PAs Still See Uptrend

The Purchasing Agents Association of Chicago reports that the uptrend first noted by its members in April and May continued into July with little modification. Members noted slight increases in inventories, employment, and backlogs. Production showed only a slight summer decline. Hand-to-mouth buying (0 to 30 days in advance) is in more evidence than it was in June.

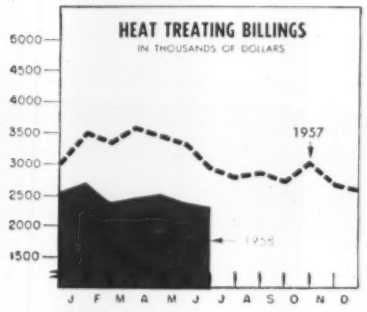
Equipment Sales Rise

There are indications of a cautious recovery in heavy equipment. The Machinery Dealers National Association reports that June sales of used machine tools rose 12.4 per cent over the May dollar volume. Says Elmer Pfeil, president of the association: "We are still above the base period of 1947-49, and we take our upturn as a clear indication that a substantial upturn in business and industry has begun."

F. P. Maxwell, vice president of the Power Tool Div., Rockwell Mfg. Co., Pittsburgh, takes a similar view. July orders ran 25 per cent ahead of June's, reversing a seasonal pattern of long standing. "It appears that industrial users are starting cautiously with lower-investment items such as power tools, rather than investing heavily just yet in higher cost machine tools. The fact that this uptrend has continued into August convinces us that we have really turned the corner."

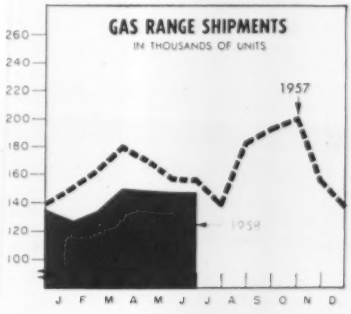
Construction Up in July

The construction industry continues to establish its position as a recession buster. July contract awards broke the record for that



	1958	1957	1956
Jan.	2,780.4	3,533.9	3,116.4
Feb.	2,436.4	3,378.9	3,124.8
Mar.	2,495.4	3,631.8	3,330.9
Apr.	2,542.6	3,572.4	3,166.2
May	2,421.5	3,389.6	3,350.7
June	2,374.8	2,912.1	3,094.5
July	.....	2,767.5	2,737.4
Aug.	.....	2,830.8	3,136.6
Sept.	.....	2,708.8	2,858.6
Oct.	.....	3,021.6	3,468.5
Nov.	.....	2,641.4	3,238.2
Dec.	.....	2,565.4	2,998.9

Metal Treating Institute.



Shipments—Units

	1958	1957	1956
Jan.	128,400	149,600	163,500
Feb.	134,500	161,600	190,200
Mar.	149,400	179,400	194,300
Apr.	148,300	168,800	176,300
May	147,300	156,200	179,400
June	152,000*	155,300	185,100
July	.....	137,400	158,800
Aug.	.....	182,600	203,200
Sept.	.....	192,100	206,400
Oct.	.....	195,500	219,100
Nov.	.....	154,300	161,100
Dec.	.....	135,800	138,700
Totals	.....	1,970,900*	2,176,100

*Preliminary.
Gas Appliance Mfrs. Assn.

month at almost $2.5 billion, claims *Engineering News-Record*. It represented the second best monthly figure of all time. One of the biggest factors is highway and bridge construction, which posted a seven month figure of $2.36 billion. This bettered the previous record set last year.

Contracts for the first week of August came to $513.9 million, pushing the total for the first 32 weeks of the year 8 per cent above the corresponding figure for 1957, indicating that this month will continue the uptrend started in early spring.

But construction costs have also risen. The *EN-R* construction cost index set a record last month, putting it 3.5 per cent above the year ago level. This was before the July 31 steel price increase, which makes another record inevitable in August.

NEMA Reports Gains

Evidence of a change in consumer spending for appliances and household goods continues to pile up. The National Electrical Manufacturers Association reports that production of major electrical household appliances in June ran well ahead of the corresponding 1957 month for the first time this year. Each of the six items reported on (refrigerators, freezers, ranges, water heaters, dishwashers, and food waste disposers) showed increases.

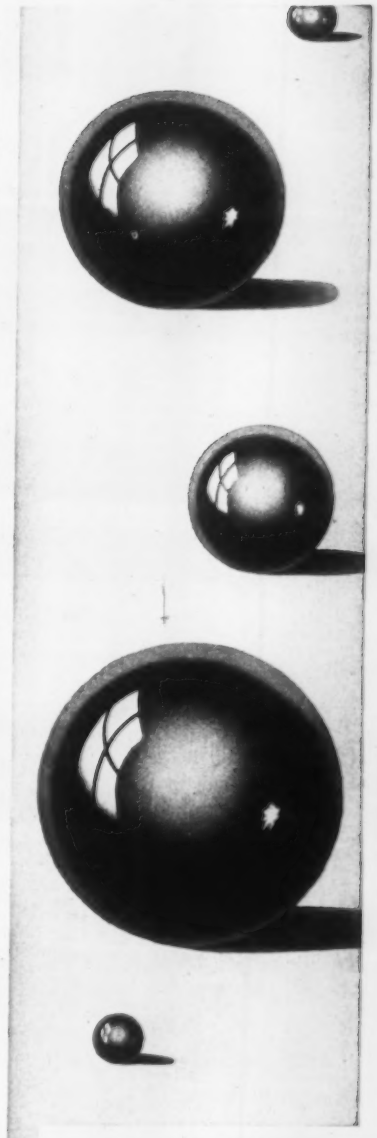
Output of radios and television sets also picked up in June, reports the Electronic Industries Association. (See table and chart, p. 64.) Retail sales of TV sets rose in June over the previous month for the first time this year, EIA notes. For radios, the June increase was the second consecutive monthly gain.

Trends Fore and Aft

• Clark Equipment Co., Buchanan, Mich., credits its Construction Machinery Div. for the greatest part of its improved sales and earnings position in the second quarter. But it adds that inquiries for its industrial trucks are greater than they have been in at least a year.

• J. I. Case Co., Racine, Wis., reports that its industrial and earth-moving construction equipment sales are more than 100 per cent higher than they were a year ago.

• The improvement in orders for screw machine products continued into June, raising the index of the National Screw Machine Products Association to 144 (1947-49 = 100).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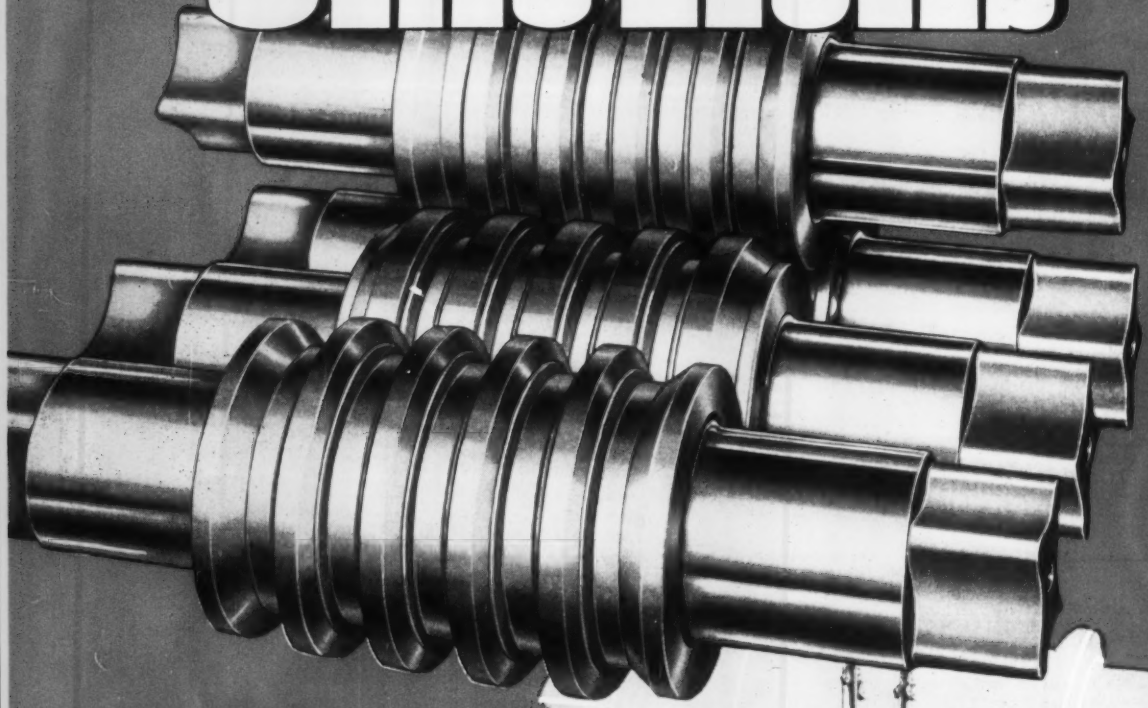
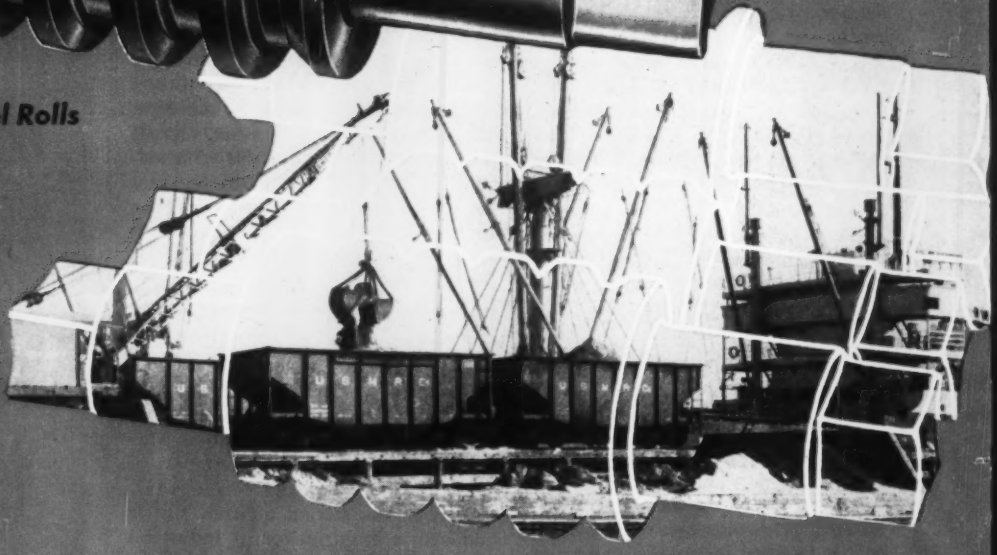
Ohio Rolls



Ohio Iron and Steel Rolls

- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
- Flintuff Rolls
- Double-Pour Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
- Forged Steel Rolls



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Skil Corp. president

ZAMBRY P. GIDDENS
Servo vice president

FAYETTE BROWN JR.
Shenango Furnace v. p.

JULIUS H. STRASSBURGER
National Steel res. dir.

John Spaulding was elected president of **Skil Corp.**, Chicago, replacing **Bolton Sullivan** who became chairman. He was vice president-sales, Black & Decker Mfg. Co.

Zambry P. Giddens was appointed assistant to the president of **Servo Corp. of America**, New Hyde Park, N. Y., and vice president in charge of its railroad products subsidiary, Servo Electronic Switch & Signal Co. He was consultant to Servo while on leave from Ira Haupt & Co.

Byron L. Stewart was made general manager of the **Guide Lamp Div.**, Anderson, Ind., General Motors Corp. He succeeds **Clarence A. Michel** on leave of absence prior to retirement.

Bruce L. Mims, former chief engineer, was made vice president-engineering, **Barden Corp.**, Danbury, Conn.

Sam Balister was appointed sales manager for **Western Machine Co.**, Milwaukee. He will be assisted by **John Leack.**

George A. Daum was made factory superintendent of the St. Johnsbury, Vt., works of **Fairbanks, Morse & Co.** Replacing him as manager of manufacturing services is **John H. Rose.**

Brig. Gen. William L. Bayer, USA ret., was made director of planning of the Electronics Div. of **Stromberg-Carlson**, Rochester, N. Y., a division of General Dynamics Corp.

Shenango Furnace Co., Pittsburgh, named **Fayette Brown Jr.** to be vice president in charge of the mining and lake transportation of iron ore as of Oct. 1. He was assistant vice president - mining and research, Cleveland-Cliffs Iron Co.

Thorn L. Mayes was appointed manager of engineering for **General Electric Co.'s** industrial heating department at Shelbyville, Ind.

Joseph L. Porcelli was elected treasurer of **Pittsburgh Bridge & Iron Works**, Pittsburgh.

Egon H. Merdinger was named manager-quality control for **Bogue Electric Mfg. Co.**, Paterson, N. J.

Warren S. McKay was elected secretary of **United Engineering & Foundry Co.**, Pittsburgh. Succeeding him as assistant treasurer is **Edward G. Frey.** Mr. McKay remains as assistant treasurer of United's subsidiaries, Adamson United Co., and Stedman Foundry & Machine Co. Inc.

Pittsburgh Steel Co., Pittsburgh, appointed **Robert W. Mullin** an assistant general manager of sales. Succeeding him as assistant to the general manager of sales is **Kenneth C. McDonough.**

Capewell Mfg. Co. appointments include **Bruce S. Williams** Chicago-Detroit district manager; **James D. Quirk** sales engineer in St. Louis; **Robert O. Bjorn** sales engineer in Chicago; **Fred S. Kobos** sales engineer in Wisconsin and Minnesota with headquarters in Milwaukee.

Julius H. Strassburger was appointed to the new position of director of research and development of **National Steel Corp.**, Pittsburgh. He was assistant vice president-engineering.

W. Edward Masencup Jr. was appointed assistant general manager of **Lynchburg Foundry Co.**, Lynchburg, Va. Succeeding him as manager of standards is **William S. Williams.**

E. S. Wolslegel was named manager of project engineering at **Alloy Mfg. Corp.**, Pittsburgh, a new subsidiary of Salem-Brosius Inc.

John E. Grant was made manager-material control for **United States Steel Supply Div.**, Chicago, U. S. Steel Corp.

Hoover Ball & Bearing Co., Ann Arbor, Mich., elected **William C. Lighthall** vice president of Uniloy Inc., a subsidiary. **Robert C. Ressler**, vice president, was appointed general manager and **James C. Carman** assistant general manager of the Ball & Bearing Div. of the parent company.

R. L. Pope was made Cleveland district manager by **Electro Metallurgical Co.**, a division of Union Carbide Corp. He succeeds **R. N. Fitzpatrick**, assigned to new duties in the New York office.

Jones & Laughlin Steel Corp., Pittsburgh, appointed **James J. Paulos** controller, Stainless & Strip Div.; **Albert E. Freed Jr.** assistant division treasurer; and **Ralph R. Gar-**

CHARLES W. ELSTON

JACK E. DOWNS

General Electric engineering posts

KENNETH F. MAXCY JR.

DONALD J. SHAUGHNESSY

Pittsburgh Steel appointments

diner administrative assistant to the president-Stainless & Strip Div.

General Electric Co. named **Charles W. Elston** manager-engineering for the Gas Turbine Dept., succeeding **Harold D. Kelsey** made consultant-special engineering problems. Succeeding Mr. Elston as manager-turbine engineering for the Large Steam Turbine-Generator Dept. is **Jack E. Downs**, former manager-turbine advance engineering for the LST-G Dept. **F. LaMoyne Gale** was made manager-materials for the GT Dept.

George G. Spehn was named manager, Chicago sales division, by **D. A. Stuart Oil Co. Ltd.**

Herbert H. Warren was named New York branch sales manager of **Exide Industrial Div.**, Electric Storage Battery Co., Philadelphia. He succeeds **John W. Weigt**, retired.

Huck Mfg. Co., Detroit, appointments as regional managers-engineering representatives include **James C. Oldson** (Arkansas, Louisiana, and Mississippi) **Russell J. Roe** (southern Texas), and **Robert B. Brackeen** (Oklahoma, Arkansas, and northern Texas).

George A. Hagerty was promoted to manager of the marketing section of the computer department, **General Electric Co.**, Phoenix, Ariz.

Jan Uytterlinde was made product manager-gasoline powered lift trucks at **Baker Industrial Trucks**, Cleveland, division of Otis Elevator Co.

Cleveland-Cliffs Iron Co., Cleveland, made **James S. Westwater** vice president-mining. Former manager of Michigan mines at Ishpeming, Mich., he succeeds **C. W. Allen**, who has resigned to take a position with the U. S. government.

Joseph J. Barrett was named superintendent of hot mills by **Carpenter Steel of New England Inc.**, Bridgeport, Conn.

Dr. J. F. Dunn was appointed assistant director of research of **Walworth Co.**, New York. He was a research engineer.

Kenneth F. Maxcy Jr., was named to the new position of manager-product development and market research of **Pittsburgh Steel Co.**, Pittsburgh. **Donald J. Shaughnessy** was named to succeed him as manager-production planning.

Howard R. Hoskin was made sales manager of S. W. Card Div. of **Union Twist Drill Co.**, Mansfield, Mass.

H. Rodney Bolin was elected president of **Automatic Spring Coiling Co.**, Chicago. He was vice president and general manager. **Robert**

FRANK PETERSON

FRANK L. MARTIN

LOREN B. WRIGHT

appointments at Republic Steel

Republic Steel Corp. appointed **Frank Peterson** manager of its Berger Div., Canton, Ohio. Succeeding him as assistant manager was **Frank L. Martin**, former production manager. Named production manager was **Robert W. Criqui**. Republic also made **Loren B. Wright** superintendent of open hearths and electric furnaces at its Southern District plant, Gadsden, Ala. Succeeding **Jones M. Cahill**, retired, he was with Symington-Gould Corp. **Stanford V. Smith Jr.** was made superintendent of Susquehanna Ore Co., Hibbing, Minn. Susquehanna is operated by Republic, Inland Steel Co., and National Steel Co.

J&L extra clean, smooth, bright wire in .306" diameter is used in this sturdy motor mount by E. H. Titchener & Company.

"Wire enhances motor mount appearance, dissipates noise"

... states wire products manufacturer

"The J&L wire we use in this motor mount for a large air conditioner has a bright, clean and smooth finish so necessary for high quality plating work.

"It also meets our rigid physical and welding quality specifications," reports Mr. Paul Titchener, president of E. H. Titchener & Company, Binghamton, New York, manufacturers of quality wire goods since 1886.

"This modern mount design takes advantage of the natural resiliency of wire construction. The mount weighs only 13 pounds, provides free flow of air, minimizes vibrations," according to Mr. Titchener.

J&L manufacturer's wire has a superior quality due to close control in every phase of production from ore mine to finished product.

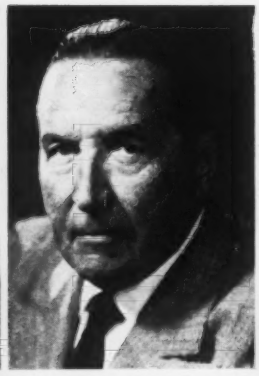
Next time you order wire, call your J&L representative for a recommendation on the exact steel wire for your specific job. Or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

WILLIAM L. VAUGHAN
Solar plant mgr.-pur.



LIVINGSTON B. KEPLINGER
heads Copperweld's exec. comm.

DEREK RICHARDSON
Olin Mathieson v.p.

LOUIS SCHLOSSBERG
E. F. Houghton sales managers

WILLIAM C. JOHNS

W. V. WARNER
Ford Instrument sales mgr.

G. Lambrecht was named general manager.

E. F. Houghton & Co., Philadelphia, named **Louis Schlossberg** manager of its new strip mill sales division and **William C. Johns** manager of the bar, tube, and wire sales division.

Frank Bobrick was named chief engineer for **Wells Industries Corp.**, North Hollywood, Calif.

Consolidated Electrodynamics Corp., Pasadena, Calif., appointed **Dr. Charles F. Robinson** chief research physicist and **Dr. Leland G. Cole** chief research chemist.

Charles W. Scott was appointed western sales manager for **Midland Screw Corp.**, Los Angeles. He was vice president of Rockford Screw Products of California.

Allis-Chalmers Mfg. Co. appointed **E. T. Cuddeback** manager, general products division sales, southeast region, with headquarters in Atlanta.

W. V. Warner was appointed to the new position of general sales manager, **Ford Instrument Co.**, Long Island City, N. Y., division of Sperry Rand Corp. He was manager-Air Force contracts.

Clarence C. Simoni was made general manager and **Edward H. Wells** assistant general manager of the packings and friction materials division, **Johns-Manville Corp.**, New York. Both are also vice presidents of Johns-Manville Sales Corp.

Joseph A. Cerny was named product sales manager-furnaces for the **Westinghouse Electric Corp.** air-conditioning division at Staunton, Va. He was director of engineering and manufacturing for the Bryant Industrial Products Corp.

Walter P. Murray was appointed to the new position of executive representative for the Eastern Metal Div., **Continental Can Co.**, New York, reporting directly to the division vice president. Succeeding him as division sales manager is **George F. Henschel.**

William L. Vaughan was made manager of purchasing at the San Diego, Calif., plant of **Solar Aircraft Co.**, succeeding **Russell L. Stevens.** He was with Axelson Mfg. Co., a division of U. S. Industries.

Livingston B. Keplinger was elected chairman of the executive committee of **Copperweld Steel Co.**, Pittsburgh. He is president of the Steel Shipping Container Institute. **Lee B. Foster** was elected honorary chairman; **Charles A. Taylor**, chairman of the finance committee.

Derek Richardson was named vice president of aluminum sales, Metals Div., **Olin Mathieson Chemical Corp.**, New York. He was acting director of sales of the Olin Aluminum division.

United Shoe Machinery Corp., Boston, named **H. F. Pfaff** director of purchases, succeeding **A. L. Neff**, retired.

Fred Stidfole was named general manager of the forging division of **Brewer-Titchener Corp.**, Cortland, N. Y.

International Resistance Co., Philadelphia, appointed **Francis P. Rice** director of operations. He was president of its subsidiary, Circuit Instruments Inc. **Edgar M. Corson Jr.** was made sales manager, new products marketing. He continues as sales manager of its computer components division.

OBITUARIES...

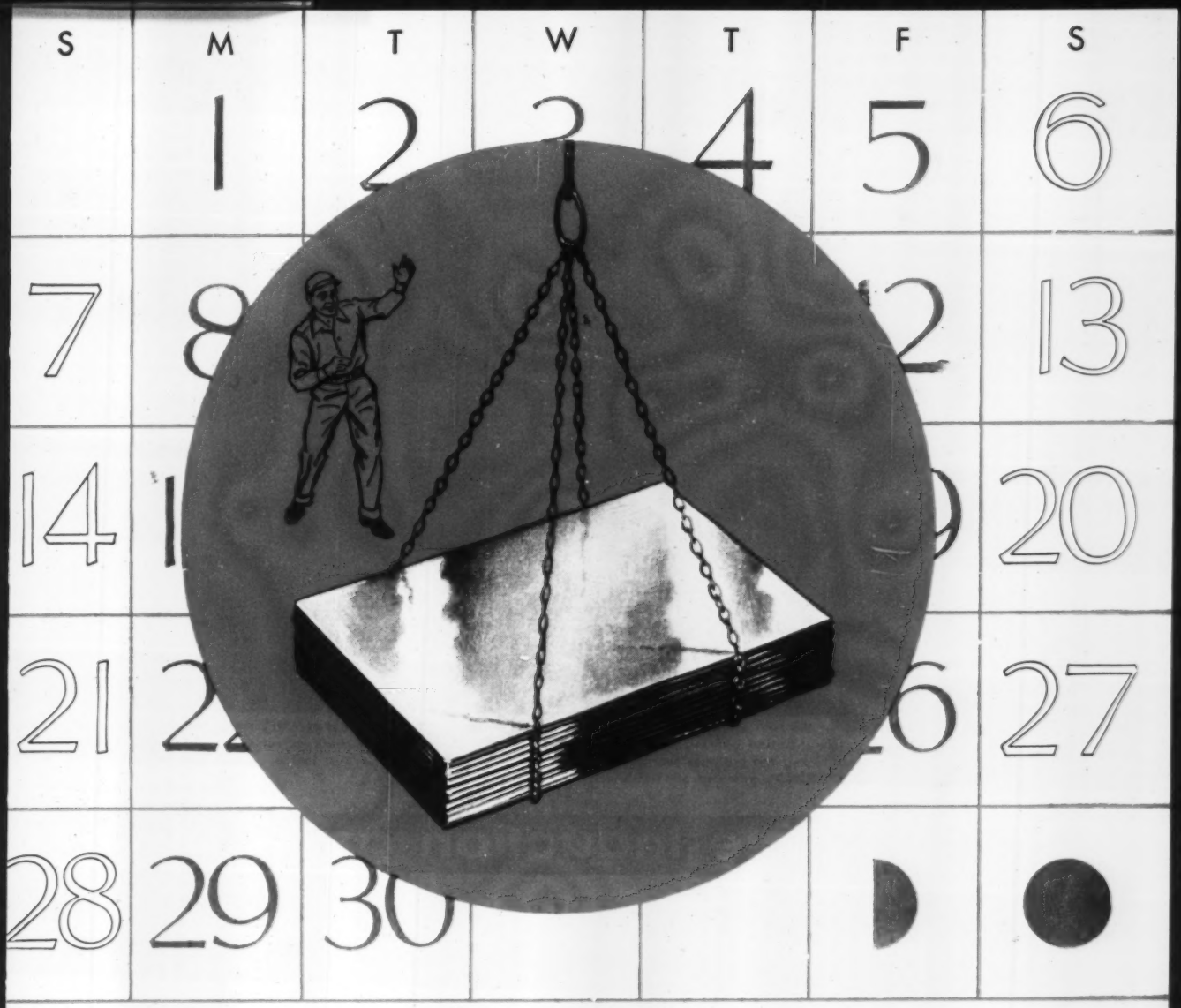
Kenneth C. Brownell, 55, chairman, **American Smelting & Refining Co.**, New York, died Aug. 4.

Gordon F. Hess, 63, former Detroit district sales manager, **Republic Steel Corp.**, died Aug. 3.

J. E. Bruce, 59, secretary and general counsel, **Wheeling Steel Corp.**, Wheeling, W. Va., died Aug. 4.

Norman J. Cornett, 47, assistant chief engineer, **Steel Co. of Canada Ltd.**, Hamilton, Ont., died July 31.

Donald C. Buxton, 46, president of **Buxton Machine & Tool Co.**, Buffalo, died Aug. 1.



Ingersoll Steel Deliveries

TIMED TO YOUR PRODUCTION

Here at Ingersoll Steel we knock ourselves out to give you on-time, as-promised delivery of a wide variety of special purpose steel sheets and plates. The minute your order is received it starts getting the V.I.P. treatment—and that's the way it goes all the way to your receiving department.

Being a specialty mill, we can and do adjust our production schedules to dovetail with your production needs. And with our advantageous central location at New Castle, Indiana, prompt deliveries are assured. Next time you need any of the products listed below, call Ingersoll Steel and you'll see what we mean.

Ingersoll Produces:

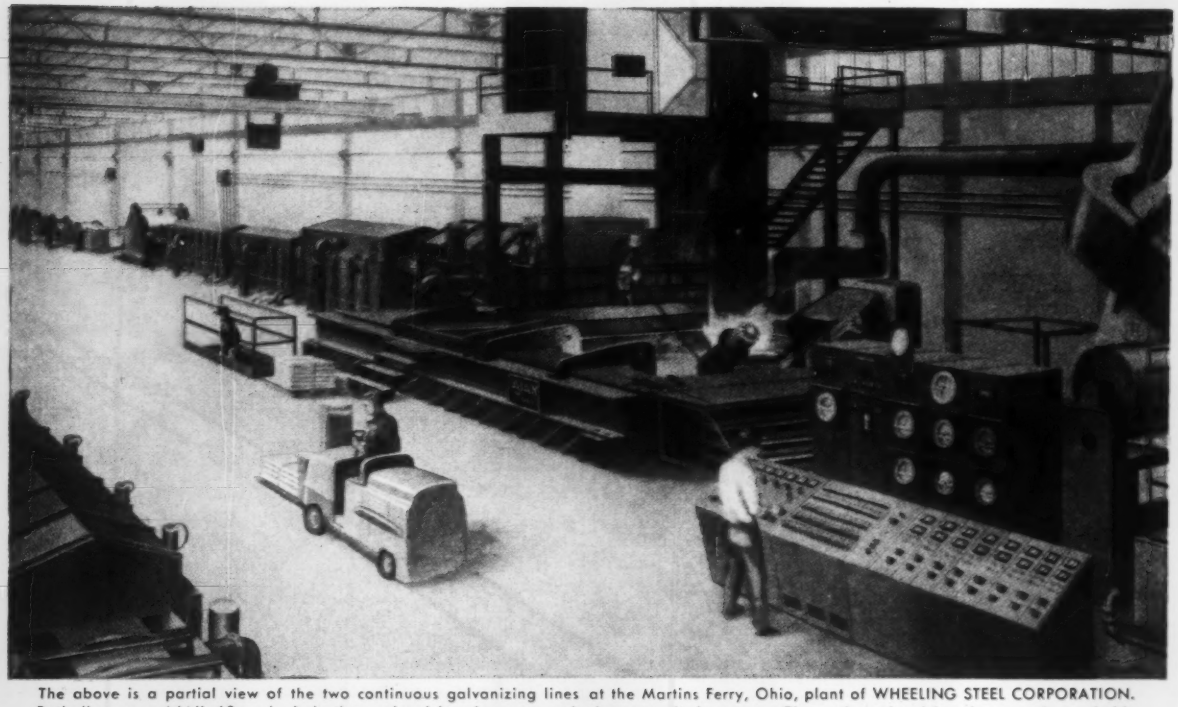
STAINLESS STEELS • HEAT RESISTING STEELS • INGACLAD STAINLESS-CLAD SHEETS • ALLOY STEELS • FORGING QUALITY ELECTRIC STEEL INGOTS • AUTOMOTIVE CLUTCH PLATE STEELS TEM-CROSS CROSS-ROLLED STEEL • CARBON ELECTRIC STEEL FOR TRACTOR CLUTCH DISCS • KNIFE STEELS • SAW STEELS HIGH SPEED HACK SAW STEELS • SOFT CENTER AND OTHER AGRICULTURAL STEELS • SPECIAL ANALYSIS STEELS

INGERSOLL STEEL B-W BORG-WARNER ®

Ingersoll STEEL DIVISION

Borg-Warner Corporation

New Castle, Indiana



The above is a partial view of the two continuous galvanizing lines at the Martins Ferry, Ohio, plant of WHEELING STEEL CORPORATION. Both lines use AJAX 60 cycle induction galvanizing furnaces and zinc premelt furnaces. The main galvanizing furnace shown holds 175 tons of zinc, is rated 2000 kw, and produces over 40 tons per hour at speeds in excess of 300 feet per minute. These continuous galvanizing lines produce WHEELING's patented SOFTITE sheet.

60 Cycle induction galvanizing

has progressed from small beginnings a few years ago to a present capacity of well over **one million tons per year.**

Here is an entirely new approach to an old art:

1. A refractory lined hearth in place of the iron kettle eliminates kettle replacement and iron pickup, drastically reduces dross formation.
2. Temperature control is precise, lag free, holds the melt at ideal galvanizing temperature at all times.
3. Gentle electromagnetic circulation facilitates alloy additions, keeps alloy uniform throughout the melt.
4. Clean and cool working conditions for hand dipping or continuous operations.

All these factors help to produce a galvanized coating of consistent superior quality and to attain high production at lowest unit costs.

MAY WE HAVE YOUR INQUIRY?

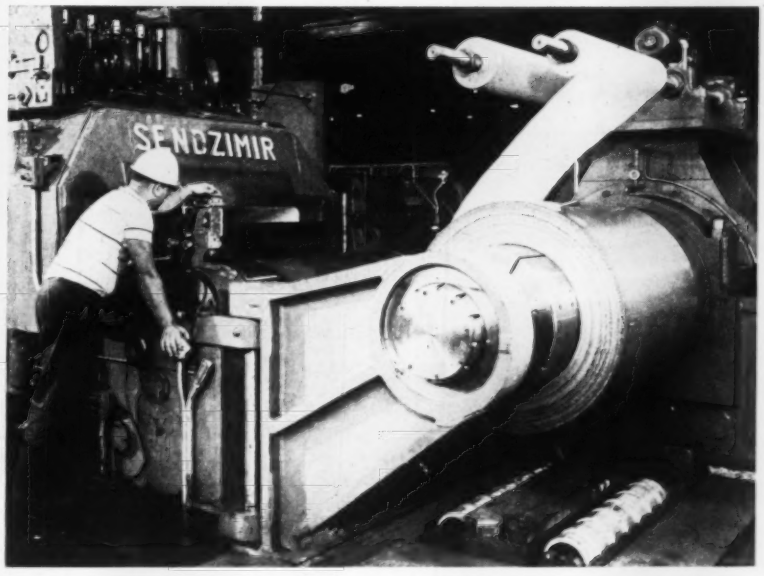
AJAX USA

ENGINEERING CORPORATION

TRENTON 7, NEW JERSEY

60 CYCLE INDUCTION MELTING

Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company



J&L's new plant at Louisville, Ohio, provides . . .

New Source for Stainless

STAINLESS STEEL sheets and strip are being rolled at Jones & Laughlin Steel Corp.'s new plant at Louisville, Ohio. The facility has a capacity of 3000 tons a month.

M. K. Schnurr is president of the Stainless & Strip Div. The plant is under the direction of Alex De-Blander. Sales will be co-ordinated from Detroit by John H. Abbott, vice president-sales of the division.

Production equipment includes a 52-in. Sendzimir cold rolling mill (shown above), built by Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. The plant has 330,000 sq ft of operating space.

Reynolds Metals Expands

Construction has been completed on Reynolds Metals Co.'s $70-million reduction plant at Listerhill, Ala., and work is well underway on a $65-million expansion of the adjoining alloys plant. The new reduction plant has an annual capacity of 112,500 tons of primary aluminum. The older Listerhill plant is still operating and has an annual capacity of 77,500 tons.

Expansion of the alloys plant will include installation of a hot rolling mill for the production of aluminum sheets and plates. Equipment will include a hot tandem continuous rolling mill (120 in. wide) and a breakdown mill (170 in. wide).

Cleaver-Brooks Expanding

Cleaver-Brooks Co., Milwaukee, has initiated a $2-million expansion program. A 70,000 sq ft addition will more than double manufacturing space at the firm's Lebanon, Pa., plant and a 25,000 sq ft production facility will be erected at Stratford, Ont. The firm makes boilers and distillation equipment.

Orders Degassing System

Ohio Steel Foundry Co., Lima, Ohio, producer of steel and iron rolls, will install a new vacuum stream degassing system with a capacity of 70 tons. The system will enable the firm to cast its own high quality forging ingots from

YOU CAN SAVE TIME, TROUBLE AND COSTS with

Formed Tubes...

★ **Save Time**
We have a huge stock of dies and, when needed, tooling's fast. We also avoid delays by making our own electrically welded steel tubing, sizes from ⅝" to 3" OD.

★ **Save Trouble**
Long, active experience with all tube forming processes and high standards of quality control make sure your orders will be completed *right.*

★ **Save Costs**
It's routine for formed tubes parts to deliver top performance, save weight, cut costs. Steel, copper, brass, aluminum or stainless tubing fabricated in ⅜" OD to 6" OD sizes; from 20 to 11 ga. metal.

Formed Tubes, Inc.
804 Prairie, Sturgis, Michigan

Write for FREE Booklet

For dependable fasteners...

...turn to

CHANDLER

PRECISION CAP SCREWS MASS PRODUCED TO YOUR SPECIFICATIONS

Caught in the "profit squeeze" between rising costs and buyer-resistance, more and more manufacturers are turning to Chandler for cold-headed bolts mass-produced at realistic prices.

Chandler's step-by-step production control and rigid inspection standards assure accuracy, precision and uniformity to meet the most exacting specifications. Using high carbon, alloy, super-alloy and stainless steels, Chandler produces top-quality bolts with special heads or threads, drilled heads or shanks for the automotive, engine and aircraft industries.

Check with Chandler today for a quotation on your special bolt requirements.

CHANDLER PRODUCTS CORPORATION

1488 Chardon Road • Cleveland 17, Ohio

Write today for Bulletin 1264-Ch

7914-CH

the hydrogen-free steel produced by this process. The order, placed with the Vacuum Equipment Div., F. J. Stokes Corp., Philadelphia, is part of a $3.5-million expansion program. A complete new plant is being built at Lima for production of forgings.

Installs Structural Shear

U. S. Steel Corp., Pittsburgh, has installed at its Homestead (Pa.) Works a new type shear that can slice through a complete range of steel beams, including wide flange beams up to 24 in. with 9-in. flange. A beam of this size and bulk weighs about 94 lb a linear foot. The shear is expected to help the works substantially increase output of lightweight wide flange beams. It was designed and built by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

Oxygen Supply Boosted

An oxygen facility will go on stream this fall providing the Clairton (Pa.) Works of U. S. Steel Corp. 22 million cu ft of oxygen a month. The plant was designed by Air Products Inc., Allentown, Pa.

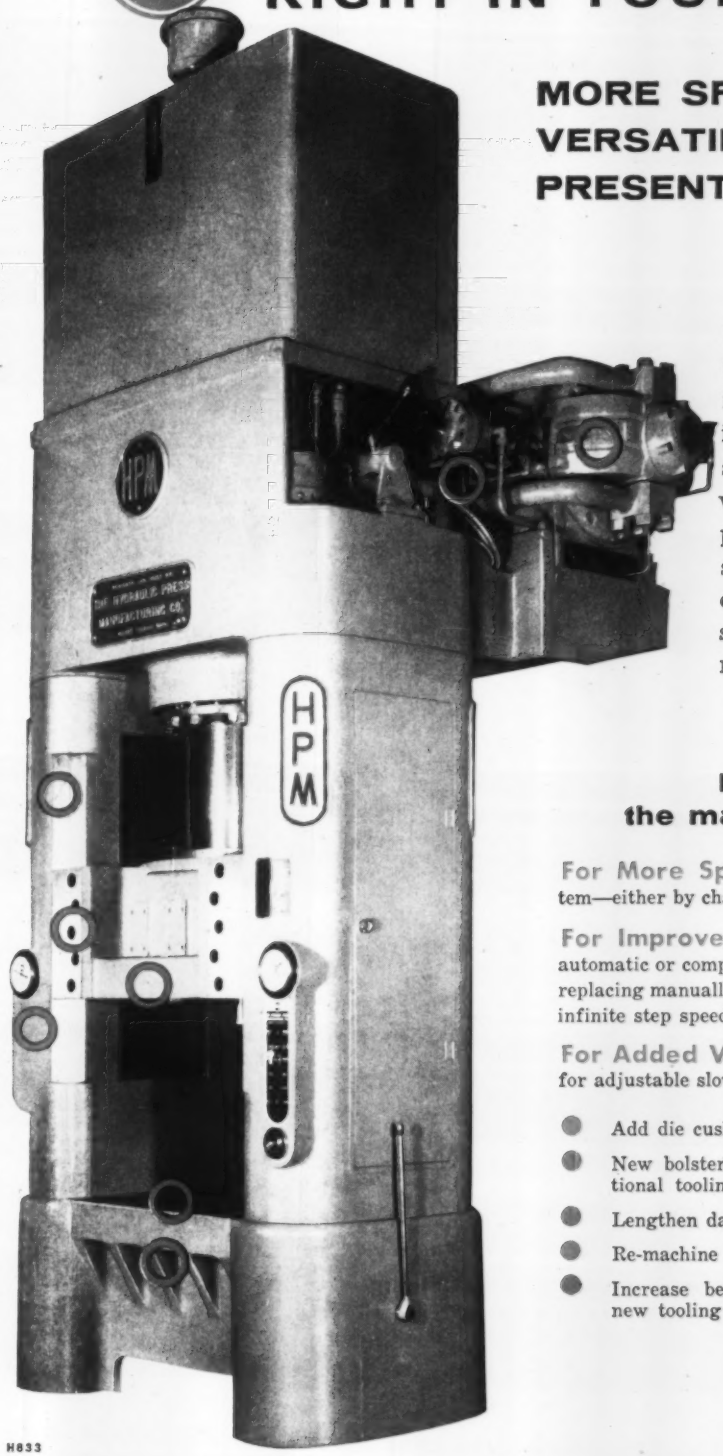
Buys Forge, Trim Press

Gardner-Denver Co., Quincy, Ill., has erected a huge forge and trim press unit at its factory in Denver. The forge weighs 352,000 lb, including 230,000 lb for the base and 35,000 lb for the trim press. A structure is being erected to house the new unit and three additional forges which are being moved from the present factory at 39th Avenue and Williams Street. The die sink and die storage departments and the bar stock storage department will be moved to the new site.

Hammond Tube Organized

Hammond Tube Co. has been established at 3169 E. 80th St., Cleveland. Initial stock of pressure and mechanical steel tubing is on hand and warehouse facilities are complete. The company draws on these sources: National Tube Div., U. S. Steel Corp.; American Cast Iron Pipe Co. (centrifugally spun tubes only); Superior Tube Co.;

UPDATE—MODERNIZE
RIGHT IN YOUR OWN PLANT



H833

MORE SPEED, CONTROL AND VERSATILITY FOR YOUR PRESENT H-P-M PRESS

Do you know it is possible for you to up-date your present H-P-M press right in your own plant . . . speed it up . . . improve cycle control . . . add extra versatility? Yes, we've done it many times which in most cases solved a specific production problem. Perhaps you have such a problem where a few press changes will "put you in business." If so, please contact an H-P-M press representative or call us direct.

Listed below are the many changes possible:

For More Speed—Add pump capacity to your present system—either by changing pumps or by adding extra pump volume.

For Improved Control—Electrical systems for semi-automatic or completely full automatic control of cycling actions replacing manually operated controls. Electro-Servo systems for infinite step speed control.

For Added Versatility—Convert standard cycle presses for adjustable slow-down, dwell or holding cycles.

- Add die cushions for drawing or forming.
- New bolsters (sliding) for new applications or additional tooling.
- Lengthen daylight.
- Re-machine guided parts for greater accuracy.
- Increase bed size (front to back) to accommodate new tooling and larger parts handling.

THE HYDRAULIC PRESS MFG. COMPANY

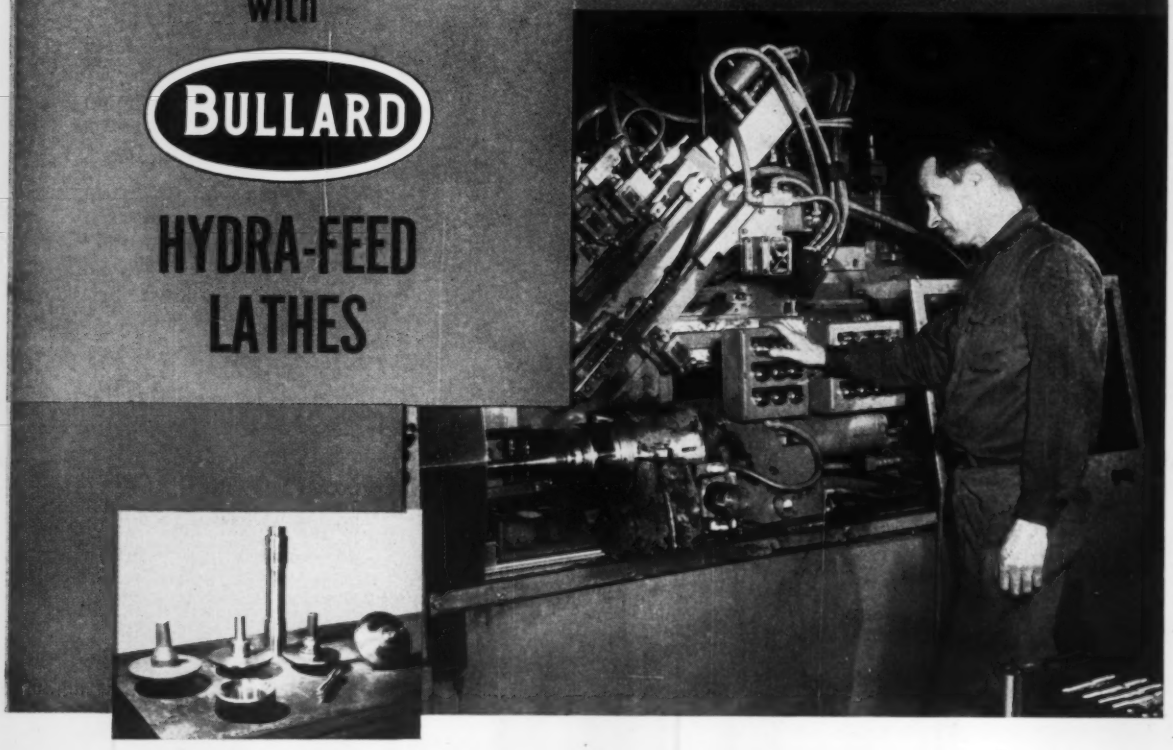
A DIVISION OF KOEHRING COMPANY • MOUNT GILEAD, OHIO, U. S. A.

INCREASE PROFITS by REDUCING COSTS with

BULLARD

HYDRA-FEED LATHES

The experience of The National Supply Company, Toledo, Ohio, manufacturers of oil field machinery, as related by Mr. Owen U. Trumbull, Tool Engineer, can be applied to improve your profit picture.



Their BULLARD HYDRA-FEED TRACER LATHE . . .

- ★ Replaced four machines previously used
- ★ Reduced machining operations from ten to four
- ★ Held work to closer tolerances
- ★ Decreased spoilage
- ★ Simplified tooling and set-up

These are all factors that have a direct bearing on profits

The BULLARD COMPANY

Bridgeport 9, Connecticut

Remember . . . to cut costs when cutting metal . . . Buy BULLARD

and Van Huffel Tube Co. Officers are: Ed Walchli, president; Jack Hammond, vice president; Don Lamiell, secretary-treasurer. Others connected with the firm are Ralph Poister, Frank Knowles, Bob March, and Jack Heffner.

J&L Orders Annealing Line

Jones & Laughlin Steel Corp. will install a high speed, continuous annealing line at its Aliquippa, Pa., Works at a cost of more than $7.5 million. The line will be engineered to operate at speeds up to 2000 fpm in a cleaning-annealing operation. This operation imparts to the strip steel an extremely uniform degree of physical properties suitable for a wide variety of tin plate uses.

The line will handle coils of strip steel weighing up to 50,000 lb and up to 38.5 in. in width. Its capacity at top operating speed will be 30 tons of tin plate an hour. It will be installed in a building in the immediate vicinity of J&L's five stand, tandem, cold reducing mill in the Tin Plate Dept.

Leschen Completes Project

Production of wire from steel rods has been added to the operation of H. K. Porter Company Inc.'s Leschen Wire Rope Div., St. Louis. This phase of the expansion program was carried out by Fruin-Colnon Contracting Co., that city.

Plans Donora Warehouse

American Steel & Wire Div., U. S. Steel Corp., will erect a Steel & Wire Works warehouse on the site of the dismantled zinc works at Donora, Pa., for storage of merchant products and welded fabric. In line with plans to consolidate the division's Rankin Works and the Donora Steel & Wire Works, the additional warehouse space will be required at Donora to more readily provide for customers' requirements, says L. F. McGlincy, Pittsburgh district manager of operations for the division.

ASSOCIATIONS

Scale Manufacturers Association Inc., Washington, elected these officers: President, Bruce Adams,

from CONTINENTAL
a lustrous new
TINNED WIRE

Here's smoothness and luster you rarely get in tinned wire. Continental's special technique makes possible an enduring, uniformly bright finish . . . a wire so bright that it can replace plated wire on many products. It retains its brightness for long periods of time in normal use. Continental tinned wire meets your needs for quality and workability and is available in almost any temper and analysis in medium low carbon and low carbon steels.

FINE—16 gauge through 30 gauge, in 8" diameter coils
COARSE—20 gauge through 5/16", in 16" and 22" diameter coils.

For smooth beauty and high degree of perfection in wire, you will want to investigate Continental Tinned Wire. Write or Telephone—today; or return coupon below.

FILL OUT AND RETURN COUPON TODAY

NAME _____ TITLE _____

COMPANY _____

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CITY _____ STATE _____

☐ Send Complete Details ☐ Have Salesman Call

CONTINENTAL STEEL
CORPORATION • KOKOMO, INDIANA

PRODUCERS OF: Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, Annealed, Liquor-Finished, Bright and special shaped wire. Also Welded Wire Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.

THE MARK OF QUALITY

BARBER COLMAN

Wheelco Instruments

Wheelco Instrumentation Among Top-Quality Features of Lucifer "Space Saver" Furnaces

Model 8000 recorder-controller provides hardening temperatures up to 2300° F, while draw furnace temperatures up to 1250° F are controlled by Model 292 Capacitrol.

Two electric furnaces in the floor space of one, each independently controlled so that hardening and drawing operations can be performed at the same time — that's the "Space Saver" line by Lucifer Furnaces, Inc., Neshaminy, Pa. Wheelco instrumentation makes an important contribution to peak-quality performance on the "Space Saver" series just as it does through the complete Lucifer line. Modern furnace design and Wheelco instrumentation go hand in hand.

Builders of top-quality furnaces and discriminating users, as well, know that the complete line of Wheelco instruments offers both the control form and degree of accuracy required by a particular installation. Put Wheelco to work on your job by contacting your nearby, broadly experienced Wheelco field engineer.

BARBER-COLMAN COMPANY

Dept. H, 1596 Rock Street, Rockford, Illinois, U.S.A.

BARBER-COLMAN of CANADA, Ltd., Toronto

Pelouze Mfg. Co., Evanston, Ill.; vice president, C. G. Gehringer, Fairbanks, Morse & Co., Chicago; and secretary, Arthur Sanders.

American Iron Ore Association, Cleveland, has elected Hugo E. Johnson president, effective Sept. 1. Mr. Johnson is now vice president-secretary.

National Constructors Association has appointed Richard E. Chislett secretary-treasurer, succeeding C. B. Bronson. Mr. Chislett was the chief of the Employer Relations Section, International Labour Office, Geneva, Switzerland.

NEW OFFICES

Daniel Construction Co. has established a New York City office at 375 Park Ave. Charles W. Cox will be manager.

International Resistance Co., Philadelphia, announces a new district sales office at the IRC Hycor plant, Sylmar, Calif.

CONSOLIDATIONS

Advance Industries Inc., Cambridge, Mass., acquired **Electrolizing Corp.**, Providence, R. I. Advance Industries makes air-conditioning and electronic equipment.

Globe-Wernicke Industries Inc., Toledo, Ohio, acquired the **Sheridan Mfg. Co.**, Wauseon, Ohio, maker of metal floats, valves, and other metal items.

Pyle-National Co., Chicago, has acquired **Steber Mfg. Co.**, Broadview, Ill. Steber will continue operations as a division of Pyle-National.

Robbins & Meyers Inc., Springfield, Ohio, will acquire **Trade-Wind Motorfans Inc.**, Rivera, Calif.

Deere & Co. and its three wholly owned subsidiaries: **Deere Mfg. Co.**, **John Deere Van Brunt Co.**, and **John Deere Killefer Co.**, were merged into a new corporation known as Deere & Co. Aug. 1. The

Roasting Supt. Charles Noonan, The Bunker Hill Co. Electrolytic Zinc Plant, Kellogg, Idaho. ESCO Spacer Casting exhibited by Noonan has been removed for inspection after 18 months of continuous service and is still in perfect operating condition.

"ESCO ROASTER ARMS LAST 2 TO 3 TIMES LONGER

and saved us $12,000 in original cost"

"Since we started using *ESCO* Roaster Arms, two and one-half years ago, we have gotten more than two full year's service from most of them and 90 per cent of them are still going strong," explains Roasting Superintendent Noonan, Bunker Hill Co.

"Operating conditions here are among the most severe to be found anywhere," Noonan continues, "but the high heat and heavy concentration of sulphur dioxide gas in the roasters just doesn't seem to hurt the *ESCO* parts nearly as much as the previous ones." And *ESCO* Roaster Arms can be successfully welded in the event of damage.

ESCO Roaster Arms are "job-tailored" to individual operating conditions for longer life and lower operating costs. For help with all your problems of corrosion, heat and abrasion, call or write an *ESCO* engineer today.

ESCO®

ELECTRIC STEEL FOUNDRY COMPANY

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y
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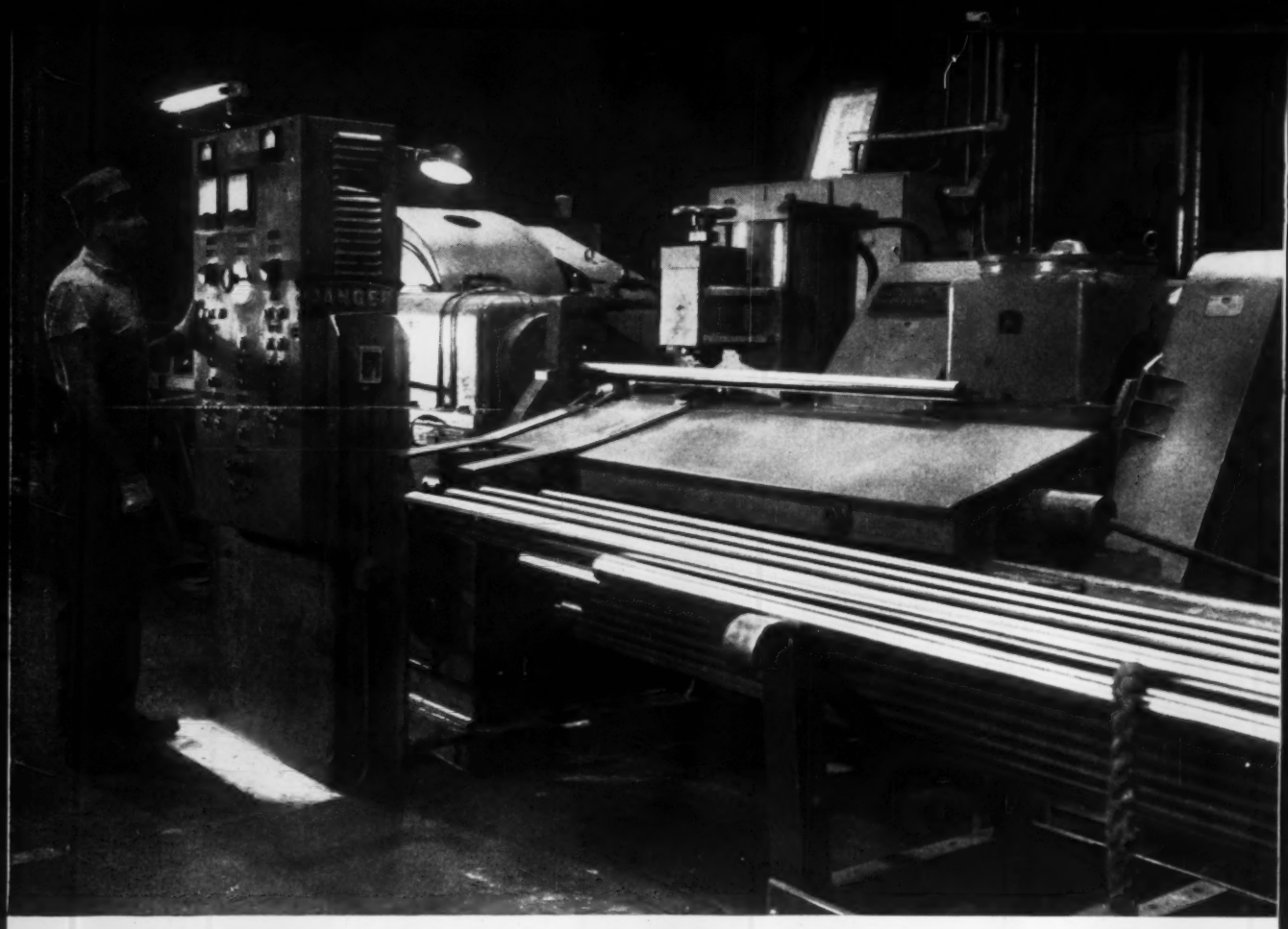


This Medart Centerless Bar Turner is a recent addition to the cold finishing department of an Eastern specialty steel mill. It is capable of turning at speeds of 12 feet per minute and removing as much as ¼-inch of metal.

BLAW-KNOX Medart gives you high speed centerless turning of small bars

You can get high speed centerless turning of bars as small as ⅜-inch in diameter with the Blaw-Knox RFPD Centerless Turner. This single-pass, high production machine employs a patented torque-chipper which absorbs the twisting action imposed on workpieces of small diameters by cutting tools. The cutting tools are carried in a single head which is arranged so that the cutting is done at the point of positive support on the bar. Automatic centering without regard for variations in diameter of the bar is provided by a pneumatic device on the feed rolls. On the out-put side of the cutter head, the bar is gripped by a power driven carriage which draws the bar through the cutter head. This creates positive tension on the bar giving a superior finish.

The Blaw-Knox Medart RFPD Centerless Turner accommodates either Carbide or Oxide Tools. Its output, for any type of alloy steel or non ferrous metal is limited only by the ability of the cutting tool. What's more, the problem of chip handling and disposal has been simplified. The cutting tool scores the bar longitudinally so that chips are broken into easy-to-handle lengths. Blaw-Knox Medart Centerless Turners are available in sizes to accommodate bars from ⅜" to 9" diameter. Contact us for complete details, and technical assistance or service.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

merger brings all Deere manufacturing operations under one company.

Beckman Instruments Inc., Fullerton, Calif., has acquired the assets of its subsidiary, **Helipot Corp.** Helipot will be operated as a division.

NEW ADDRESSES

American Air Filter Co., Louisville, has moved its New York City branch office and its eastern regional office into the same quarters at 292 Madison Ave., New York 17, N. Y.

Harris-Seybold Co., division of Harris-Intertype Corp., has moved its central district sales-service offices to 1430 Illuminating Bldg., 55 Public Square, Cleveland 13, Ohio.

Lucas Steel Co., Toledo, Ohio, is moving its offices and facilities to 1115 W. Central Ave., formerly occupied by Fort Pitt Steel Co.

Erie Tool & Supply Co., Toledo, Ohio, has moved to its new building at 304 N. Westwood Ave.

NEW PLANTS

Illinois Tool Works, Chicago, has established a plant in Hawthorne, Calif., which will be called the Calinoy Div. It also has bought a controlling interest in Pacific Solenoids Inc., El Segundo, Calif.

National Cylinder Gas Div., Chemetron Corp., Chicago, is building a $1,750,000 liquid oxygen, nitrogen, and argon plant in Compton (Los Angeles), Calif. Production will exceed 30 tons of liquid gases a day.

American Electronics Co., Minneapolis, has moved into a new 25,000 sq ft plant in St. Anthony, Minn.

Steel Foundry Co., Portland, Oreg., reports its new foundry in Port Coquitlam, B. C., is in full production. It will turn out ½ to 5000 lb alloy steel castings.

CALL ON TORRINGTON!

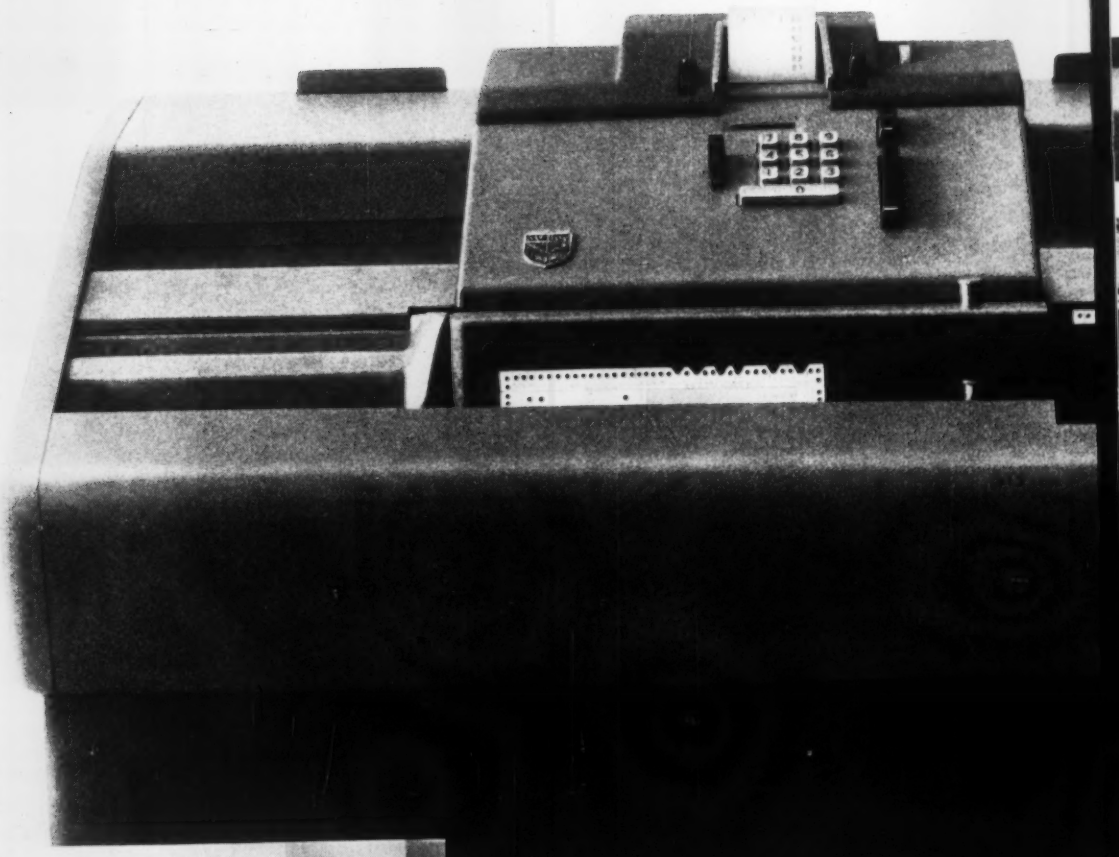
Custom manufacture of small precision metal parts in large volume is the single concern of our Specialties Division. Skilled engineering and modern production facilities insure that parts are made to your most exacting standards . . . by the most economical and efficient methods for your particular job . . . on a reliable production schedule to meet your quantity requirements.

For production in quantity of high-quality precision metal parts, call our area salesman, or write direct to:

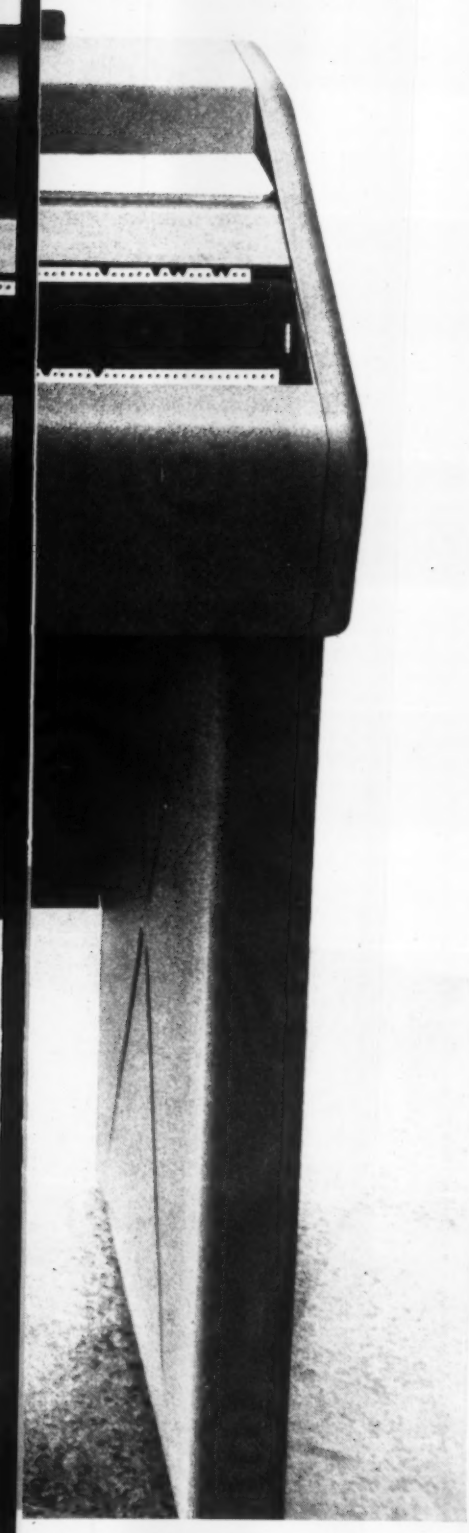
The Torrington Company, Specialties Division, 900 Field Street, Torrington, Conn.

TORRINGTON SPECIAL METAL PARTS

Makers of Torrington Needle Bearings



Royal McBee is cutting automation down to size



NEW KEYSORT TABULATING PUNCH

Gives you automatic punched-card processing with one low-cost machine!

The Keysort Tabulating Punch today cuts automation down to size by providing, in just one compact unit, everything required for complete punched-card processing. With greatest adaptability to a company's size and set-up. And at a rental of less than $100 a month.

Keysort Tabulating Punch code-punches and tabulates quantities and amounts in Keysort cards . . . then reads, duplicates and summarizes these figures . . . simultaneously printing them for visual verification. The most versatile machine of its kind available. Easy to master, easy to use. In almost every area of plant control – job costing; labor distribution; inventory; labor, material and production control; sales and order analysis. In service organizations and hospitals – in every type of operation requiring fast, accurate data processing.

Call your nearby Royal McBee man to arrange a demonstration, or write us for illustrated descriptive folder.

OUTSTANDING FEATURES ★ Simple operation from 10-key keyboard ★ Punches 2 quantities in one operation (dollars-hours, dollars-units etc.) ★ Simultaneously tabulates all amounts ★ Reads sorted cards, automatically accumulates and totals punched amounts ★ Prints all figures for immediate verification ★ Adaptable to any size work-load . . . to centralized and decentralized operations.

McBEE KEYSORT®

PUNCHED-CARD CONTROLS FOR ANY BUSINESS

ROYAL McBEE Corp. PORT CHESTER, N.Y., Offices in principal cities. In Canada: The McBee Company, Ltd., Toronto 18

NILSON 4-SLIDES FORMING PRODUCTION PROFITS... *Automatically*

COMBINE OPERATIONS on a NILSON

Wire and ribbon metal forms involving secondary operations can be produced at minimum cost on Nilson 4-Slides. You can combine stamping, welding, metal cutting and sub-assembly operations with the basic forming cycle . . . eliminate the need for expensive, single-purpose equipment.

The Nilson "Vertiform" shown above, for example, has a die head mounted on the right-hand forming slide. Wire stock is straightened, cut off, formed and threaded—all automatically in one cycle!

In addition to the new "Vertiform," Nilson builds 17 models of horizontal 4-slides, including 5 ribbon metal machines with built-in press units. For a new approach to low-cost production of wire forms and small metal stampings, it will pay you to get in touch with Nilson.

Send today for the Nilson General Catalog on Automatic 4-Slide Equipment!

NILSON

THE A. H. NILSON MACHINE CO.

1507 Bridgeport Avenue • Shelton, Conn.

AUTOMATIC WIRE & RIBBON METAL FORMING 4-SLIDE MACHINES • WIRE & STOCK REELS • WIRE STRAIGHTENING EQUIPMENT • AUTOMATIC STAPLE FORMING MACHINES • SPECIAL WIRE FORMING EQUIPMENT

Coming Sept. 22

Building Marketing Men

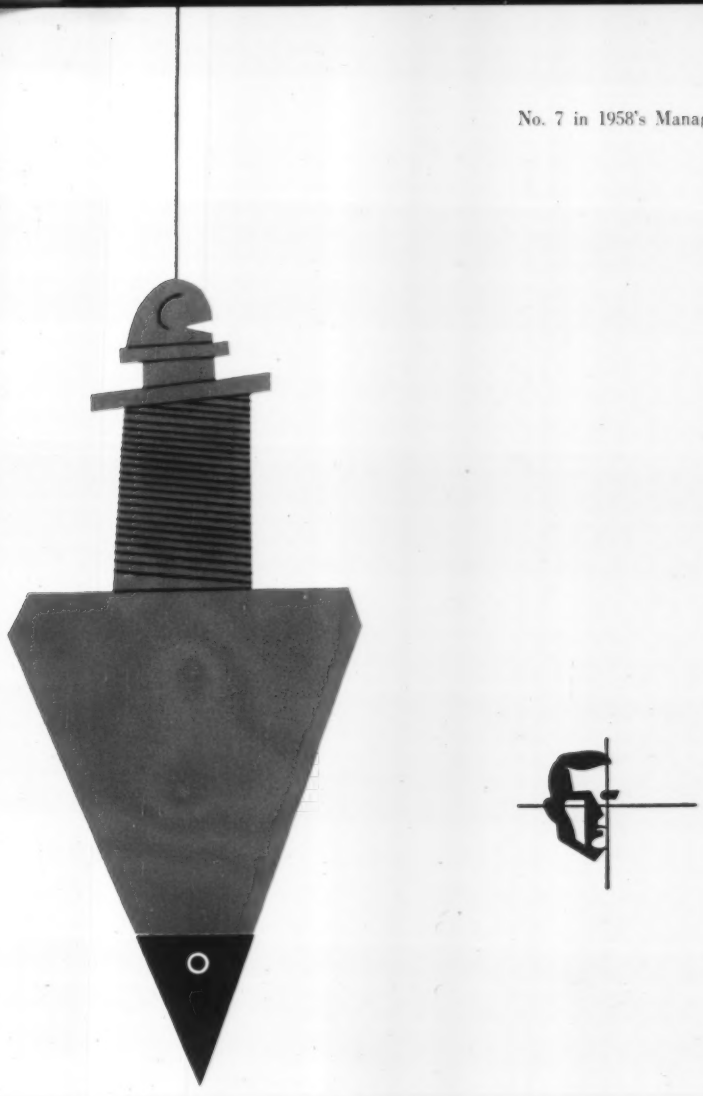
In the next decade, competent marketing men will be in shorter supply than engineers. The concept of marketing is so new that it's going to be increasingly difficult to find the people needed.

To counteract the anticipated shortage, management associations and professional societies are offering training courses and universities are turning out more marketing graduates, but the major responsibility for developing marketing men falls on the companies which need them. STEEL's next Program for Management article will point out ways to do the job.

Published so far in the 1958 series:

1. **Balancing Management for Profit (Feb. 17, p. 113)**
2. **Production Control for Profits (Mar. 17, p. 83)**
3. **Managing Defensework for Profit (Apr. 14, p. 125)**
4. **Building a Labor Contract (May 19, p. 125)**
5. **Pricing for Profit (June 16, p. 87)**
6. **Finding Out What Customers Will Buy (July 14, p. 101)**
7. **Surveying the Market (Aug. 18, p. 85)**

Extra personal copies of these Program for Management articles are available until the supply is exhausted. Write: Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



Surveying the Market

ONCE UPON A TIME a successful industrial manufacturer dreamed that his competition was moving ahead of him. When he awakened, it had!

THE MORAL: Companies in the capital goods and component industries that use market research get a big jump on their competition because this branch of business has been slow to adopt this scientific management tool. Producers of consumer goods have been cashing in on it for years, and there's no good reason why more industrial companies can't adapt it to their needs.

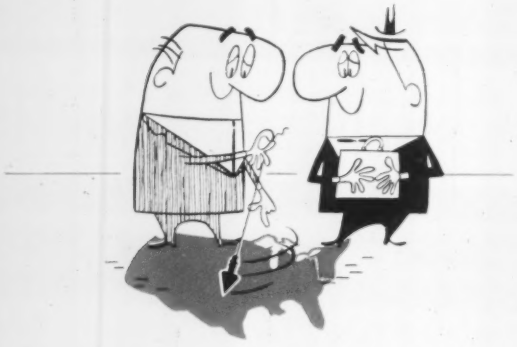
Take the case of Fischer Special Mfg. Co., Cincinnati, a maker of screw machine products. Some years back, the management of this 60-man shop decided to change its product mix from a general line of screw machine products to a complete line of milled aluminum and brass nuts (perhaps the most competitive segment of this industry). It did some market surveys to find out just what users wanted in terms of quality, price, and delivery, and then set about to meet those requirements.

To help pinpoint the markets, Fischer did two things. First, it put all of its sales records on an SIC basis, assigning the proper code number to each of its customers. Then it hired an outside agency to do a market potential survey. The study uncovered several areas in which sales were below potential. Sales territories and salesmen's ef-

What Market Research Can Do for You

MARKETING MEN agree that one of the biggest problems in charting markets comes at the end of the project: The report often gathers dust on some executive's desk. Only through use can management justify the time and money that went into the survey. Here are some of the areas in which a good survey can benefit you:

1. In setting sales quotas and adjusting sales coverage and territories.
2. In developing sales incentive and compensation plans.
3. In cleaning up customer and prospect lists.
4. In determining size of sales force.
5. In cutting sales costs and increasing profits.
6. In checking effectiveness of salesmen and distributors.
7. In evaluating your sales methods.
8. In establishing the proper methods of distribution.
9. In planning where and when to build new facilities.
10. In planning acquisitions or mergers.
11. In planning production schedules and controlling inventories.
12. In determining what customers and prospects want from you.
13. In improving products or introducing new ones.
14. In finding new uses for present products.
15. In planning product mix.
16. In determining short and long term business conditions.
17. In making up company and department budgets.
18. In determining your competitive position in your industry.
19. In determining and evaluating advertising media.
20. In legal proceedings.
21. In scheduling employment needs.



forts were realigned to take advantage of the findings.

The result: Sales have climbed.

Why Bother?

In a dynamic economy, markets change rapidly, and marketing practices must change with them if a company is to survive or maintain its competitive position in its industry.

New products or modifications of old ones change customer preferences. Buying habits and desires of consumers change. Recessions and booms create abnormal conditions. Customer resistance to higher prices and temporary saturation of certain types of goods cause buying patterns to alter.

Population changes dictate revisions in marketing practices. Quantitative growth and shifts in the distribution of age groups have already had an effect on markets. One of the principal findings of the *Life* Study of Consumer Expenditures was the impact of the trend toward suburban living on retail selling.

Geographic movements within the population and industry affect distribution patterns. Since 1790, the center of population has moved southwestward from the vicinity of Baltimore, to near Olney, Ill. In 1874, the center of steel capacity was in Juniata County, Pa., northwest of Harrisburg. When it was last figured, it had moved as far west as Westminster, Ohio, near Lima.

Despite such changes, a well organized marketing program will boost the odds in favor of your survival.

A Big Job

Frederick T. Keeler, director of marketing, Carborundum Co., Niagara Falls, N. Y., sums up what management expects and should get from marketing in six areas:

1. How large the market is in total volume, geographic distribution, and product line.
2. What the company's share of the market is.
3. The company's competitive position.
4. The effectiveness of its advertising.
5. A continuous evaluation of distribution policies.
6. Creative thinking and action with a sense of urgency.

"On the basis of this type knowledge, management expects its marketers will develop and put into ac-

tion marketing plans and policies based on fact . . . and presented in one understandable recommendation rather than in bits and pieces," Mr. Keeler concludes.

In surveying your market potential, you should get the answers to several questions, maintains Robert G. Seymour, director of the Bureau of Business Management at the University of Illinois:

Who are possible customers? Where are they? How do they use the product? What is the rate of use? What is the seasonal variation of sales? Are the buyers also the users? How do age, marital status, and related factors affect sales? What is the effective purchasing power of the potential users? What is the extent and quality of competition?

The answers can give management one of its most useful tools. But most marketers agree that this is merely the beginning. Only after the marketing facts have been thoroughly analyzed and combined with the knowledge and judgment of experienced sales or general management can they lead to sound decisions.

Using Market Research

While the most common use of the survey is in the charting of sales potentials and the formulating of forecasts, management can get a great deal of mileage out of it in other directions (see checklist, Page 86).

Take the case of a tire chain maker. Sales were falling. He had two plants, one on the East Coast and one in Chicago. Unless sales could be increased, he would have to shut down one or both.

The first job of the market research team was to determine the size of the total market and the company's share of it. Figures were available (through the National Association of Chain Manufacturers) for monthly tonnage shipments broken down by types. Annual dollar volume of shipments was also available.

A thorough study of the company's sales records revealed its share of the market and its geographic strengths and weaknesses. It also showed a steady growth in sales to the agricultural and construction markets, which represented a relatively small portion of the total.

Assuming that there should be a correlation between use of tire chains and total miles driven by passenger autos each year, the marketers obtained mileage figures from the Automobile Manufacturers Association. The mileage data were projected over ten years to show

Developing a Marketing Program for an Industry

"A marketing program is your only sound assurance that you will be in business five years from now," declares Richard C. Meloy, marketing director of the Gray Iron Founders' Society Inc., Cleveland. When Mr. Meloy joined GIFS in 1956, it was evident that the industry's sales were not keeping up with the growth of the general economy despite technical advances in its product. Until recently, few company managers (most firms are in the small and medium brackets) could see the need for a marketing approach to selling.

To correct the situation, Mr. Meloy developed a market research program for the industry. The first step was the preparation of two questionnaires which GIFS sent to 14,900 design engineers and 6900 purchasing agents in plants using castings. They were aimed at finding where the potential business was and what kind of service, pricing, and quality users wanted.

Returns went over the 2300 mark. About 85 per cent were signed by men of top management status. The purchasing agents replying represented companies buying more than $124 million worth of gray iron castings a year.

Results were made available to members of the association, along with a suggested marketing program simple enough for even the smallest company to implement. The program presents 126 ideas which they can put to use in increasing their profitable sales. The basis of the program is sales analysis (see picture) coupled with a questionnaire survey of potential customers in the company's market area.

"The success of our efforts to help an industry sell itself is evident in the expanding marketing and selling programs of foundries," Mr. Meloy states. The surveys were followed up with marketing conferences in 11 cities and sales training conferences that are still being conducted across the country.

Foundrymen are now carrying the ball. They are running their own engineering seminars, inviting both customers and prospects. A high percentage of acceptance is reported. Others are sending out questionnaires modeled after the GIFS original. Forest City Foundries Co., Cleveland, mailed about 430 and got replies from 185 on the first try. About 95 per cent were signed, giving the company an excellent prospect list.

indicated growth or shrinkage.

To check on its competitive position, the team searched annual reports of its competitors, *Moody's Industrials*, and business publications. They also talked with their sales and production personnel.

Freight rates were checked for each plant area.

All the information was transferred to marketing maps in an effort to determine the geographic density of the potential market. With data obtained from the U. S. Weather Bureau, snowfall and rainfall were added to the map. Figures on passenger car mileage by geographic area (source: U. S. Bureau of Public Roads) and passenger car registrations (R. L. Polk & Co.) were plotted next.

Surveys of city street departments and state highway departments revealed the rapid advancement in snow removal equipment and techniques. An attempt was made to check the trend in the sale of snow tires. (Statistics on this are available only to members of the Rubber Manufacturers Association.)

On the basis of this information, management of the chain company decided to close down the east coast plant and transfer all tire chain operations to Chicago. Even though the total market was declining, the Midwest still represented the highest potential, and it was closer to the small but growing agricultural and construction markets. Sales territories were realigned to make the most of the potential. The eastern plant was sold because it was not equipped to make other types of chain.

Start from the Beginning

A fairly uniform procedure is used in most industrial and consumer market surveying. Richard D. Crisp, president of Richard D. Crisp & Associates Inc., Chicago, says it is similar to the problem solving approach of the social and physical sciences.

1. Define the problem in specific terms.

2. Refine the problem and subdivide it into its individual research problems.

3. Develop a plan for securing the information needed.

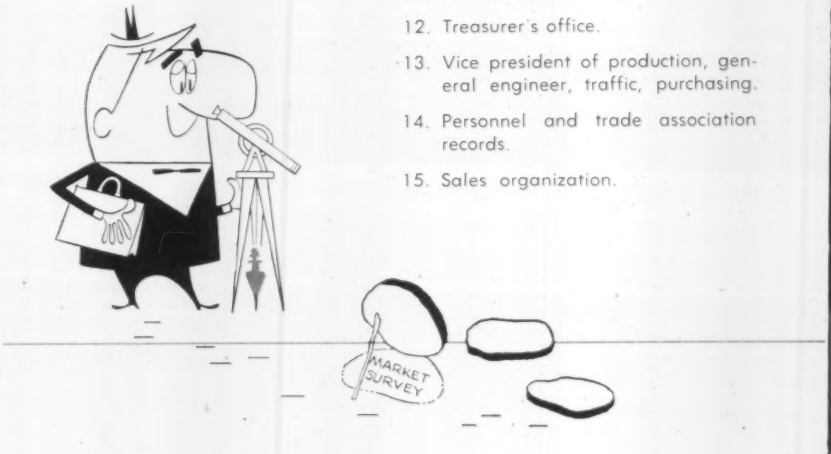
4. Get the facts.

Leave No Stone Unturned

No market survey is any better than the information upon which it is based. For all practical purposes, sources of data are limited only by time and the imagination of the researcher. At Johns-Manville Corp., New York, few stones have been left unturned. Here are 61 sources of information it uses:

WITHIN THE COMPANY—

1. Detailed sales reports.
2. Plant shipment reports.
3. Point of origin reports.
4. Plant operating statements.
5. Share reports, national and state.
6. Tabulating department.
7. Comptroller.
8. Analysis department.
9. Market survey department.
10. Chairman's office.
11. Economists.
12. Treasurer's office.
13. Vice president of production, general engineer, traffic, purchasing.
14. Personnel and trade association records.
15. Sales organization.



5. Analyze the facts and interpret them.

6. Summarize the results and report the findings to management for appropriate action.

In the all-important first step, the researcher has some well developed tools to help in describing the product and the geographical area. The Standard Industrial Classification is the most common method in use today for defining industries by the types of activity or the products they make. Seventy-nine major industries are identified by two-digit numbers. Each is subdivided into secondary and tertiary groups identified by three and four-digit numbers.

Almost all market data from the government, industry associations, publications, and private organizations follow this general pattern. Companies which keep their own records by SIC code are able to use this outside information with little if any modification.

On the question of geographical definition of markets, one survey found that over 60 per cent of the manufacturers polled prefer a county breakdown. Much of the government's data are presented on this basis, and many industry associations have converted to it. Another popular breakdown is by standard metropolitan areas. The two systems can be used together.

Charles W. Smith, senior consultant, McKinsey & Co. Inc., New York, has developed a new geographic breakdown of what he calls trading centers. It is based on the idea that each major center of population serves the residents of a relatively small surrounding area. He lists 2948 trading centers with population and retailing information about each in a new book, *Targeting Sales Effort*.

To Get the Facts

16. Government department.
17. All nine company divisions.
18. Staff liaison.
19. Exploration, geologic, forestry departments.
20. Legal department.
21. Patent attorney.
22. Research department.
23. Region or district customer records.
24. Sales promotion department.
25. Reports of business conditions.

OUTSIDE THE COMPANY—

1. Trade associations.
2. U. S. government—Department of Commerce, Department of Labor, Bureau of Labor Statistics, Housing & Home Finance Agency, Bureau of Census.
3. Trade publications.
4. F. W. Dodge Corp. reports.
5. J. W. Thompson Consumer Panel.
6. Suppliers.
7. Customers and their customers.
8. Producers Council.
9. National Industrial Conference Board.
10. Other publications such as *Harvard Business Review*.
11. American Marketing Association.
12. American Management Association.
13. Building Research Institute.
14. Chamber of Commerce.
15. Econometric Institute.
16. Standard & Poor's.
17. Competitors.
18. Shipping companies.
19. Universities.
20. Consultants.
21. Annual statements.
22. Prospectus of stock issues (SEC).
23. Bond issue data.
24. New York Public Library (*Engineering Index, Readers Guide, Industrial Arts Index*).
25. *Sales Management* Survey of Buying Power.
26. Banks and bank letters.
27. Buyers guides.
28. Mailing lists.
29. Brokerage houses.
30. Dun & Bradstreet Inc.'s marketing department.
31. Real estate associations.
32. ICC hearings.
33. Boards of underwriters.
34. Unions (practices on usage of materials).
35. State industrial directories.
36. Engineering societies.

Anybody Can Do It

Almost any company can do some type of market research. One of the Industrial Bulletins of Arthur D. Little Inc., Cambridge, Mass., tells of the restaurateur who stood at the kitchen door and examined food diners left on plates. He was practicing market research.

Size of a company is no criterion for the necessity of knowing what and where the market is. The late Maurice S. Bernstein, operations research engineer, Johns Hopkins Aplied Physics Laboratory, said there are three steps a small businessman can take to inaugurate his own marketing program:

1. Assign responsibility to someone who understands the rudiments of studying figures or is willing to learn.

2. Organize all internal figures logically.

3. Make maximum use of external data. It's available at little or no cost.

Check Yellow Pages

Regardless of size, you may want an outside agency to do your market research. (See STEEL, July 14, p. 103.) Practically every city of 100,000 population or more and many smaller communities have such organizations. In Cleveland alone, 25 are listed (exclusive of advertising agencies) in the yellow pages.

Whether the work is done inside or outside the company, the biggest job is gathering the quantitative and qualitative information on which to act. Figures alone do not describe a market.

The rule of thumb is that all market research starts from within—sales records, warranty cards, billings, production schedules, and any other records or reports which tell how much and where. Don't overlook the wealth of information that your sales, management, and production people can give you.

The National Industrial Conference Board suggests six rules for getting the maximum co-operation from your salesmen:

1. Don't ask for information which might be influenced by the salesman's personal judgment or opinions.

2. Don't ask for too much information—it encourages hasty reporting.

3. Request information that he has on hand or can easily get.

4. Tell him what the information is for.

5. Keep questionnaires as simple as possible.

6. Tell him how the information is to be used to his ultimate advan-

tage and follow up by showing him what was gained by his help.

In handling outside information, Mr. Bernstein recommended: To be dependable, it should have a continuous history at least as long as that of your interior information. It should be up to date and available at frequent intervals. It should be broken down into useful form. The source should be reliable and unbiased. And last, the source should be stable, assuring continuity for future reference.

Where You Get the Facts

Three sources which stand up under such examination best are the federal government, trade associations, and the business press.

While every branch of the government has some information helpful to market researchers, the Bureau of the Census is probably the most important. The population censuses are fundamental because people make markets. But in determining potentials for specific industrial markets, the 1954 Census of Manufactures is indispensable. It includes statistics for about 460 industries on employment, payrolls, inventories, capital expenditures, fuels, electric energy, power equipment, products made, materials used, value added by manufacture, and many others. The data are broken down by states, cities, standard metropolitan areas, or counties. (Cost: $25 for three volumes.)

Supplementing the census is the Survey of Manufactures. The 1956 report, which is now available, updates much of the census data for industry groups and important industries by geographic divisions and states.

One of the most helpful government publications is County Business Patterns, now being published for the first quarter of 1956. Such data are important because sales territories often cross state lines, and counties from several states have to be combined as a unit. The information is among the most complete and accurate the government puts out because it is derived from employers' records required under the Old-Age & Survivors Insurance Program. About 4 million business establishments are included in the new report. Also, the SIC breakdown has been expanded. Published in 11 parts, it costs $17.

Many other statistical series on all phases of business are available from the government. Generally, they can be obtained at field offices of the Commerce Department. In addition, the government has some unpublished information which is often available upon request.

Trade associations, as shown in the case study of the tire chain manufacturers, are one of the most valuable sources of information. It is in this area that producers of industrial goods have done their best job. One of the chief limitations is that only members contribute to their fact gathering, and many times only members get the results.

A. J. Nesti, chief statistician of the National Electrical Manufacturers Association, says the most important feature of industry association data is that they "provide the most accurate and up-to-date information that can possibly be compiled. Monthly figures, segregated by geographic areas, can give the member the basic facts for resolving his marketing problems."

They are also among the least expensive to obtain. David J. McCarty, administrator of market research for Radio Corp. of America, Camden, N. J., puts it this way: "Nationally, we have data reflecting production, factory sales and inventories, distributor sales and inventories, and dealer sales and inven-

Get the Most Out of Your

The main reason for charting your markets is to increase sales and enhance profits. The market survey is the springboard for short and long term sales forecasts. But to get full value out of the project, the forecasts should be made available to other company officials for study and use. At the special marketing conference of the American Management Association in Chicago last May, three officials told how sales forecasting helps them.

CHARLES F. AXELSON
Controller
U. S. Gypsum Co., Chicago, Ill.

H. GORDON FROMM
Vice President of Manufacturing
International Latex Corp., Dover, Del.

DAVID S. GIBSON
Vice President-Purchasing
Worthington Corp., Harrison, N. J.

Sales Forecasts

FINANCE

1. Makes possible the projection of earnings, which helps in determining dividend policy, rate of capital expenditure, and rate of maintenance expenditures.

2. Helps in planning personnel requirements and training programs to provide well-trained people to meet any situation.

3. Permits closer budgetary control over expenses of financial division.

4. Aids in properly apportioning state income and franchise taxes to individual accounting periods and in leveling off erratic expenditures.

5. Helps in financial analysis of capital expenditures and changes in production or distribution arrangements which have financial significance.

PRODUCTION

1. Helps in scheduling proper production load for plant and in leveling out production peaks and valleys.

2. Helps in maintaining closer control over inventories of raw materials, goods in process, and finished goods.

3. Provides guide for equipment and facility requirements.

4. Aids in organizational planning and management development.

5. Enables management to gear personnel requirements to production schedules, especially skilled labor and training programs.

6. Helps in keeping closer control on operating budgets through standard costs.

7. Helps in maintaining cost control through greater efficiency and less overtime.

PURCHASING

1. Reduces chances of overordering or underordering.

2. Permits better grouping of orders for quantity purchasing, which cuts unit costs.

3. Enables purchasing department to anticipate its cash requirements more accurately, an important consideration when working capital is short.

4. Reduces danger of ordering materials too far in advance, which conserves cash.

5. Gives purchaser sufficient time to properly investigate and line up good sources of supply.

6. When drop in business is indicated, enables purchaser to cut back purchasing schedules and prevent pileup of materials in plant.

7. Keeps vender informed so that he can block out part of his production capacity for anticipated orders from purchaser.

8. Eliminates hasty contract negotiations, which sometimes are costly because of errors.

tories for each type radio, for each category of black and white TV, and for various classes of phonographs. Moreover, we get what we want on a weekly or monthly basis, whichever is appropriate. Additionally, we have sales to dealers by counties for radio and TV, on a monthly basis.

"And the entire Electronic Industries Association's statistical program costs less than 1 cent per TV, radio, and phonograph. How much would it cost the individual company to obtain these data completely by its own devices?"

Many association reports, plus marketing data from many of the other sources mentioned in this article, are printed periodically by business magazines. Besides the information printed weekly in STEEL, the Facts & Figures section in its Metalworking Yearbook issue contains over 300 statistical series. Covering all phases of metalworking, they are collected from more than 50 sources.

In addition, some business publishing houses also have their own research departments which make special marketing studies for their readers and advertisers (see illustration on Page 92). Several publish census type books similar to STEEL's Metalworking Markets in the USA. This is a continuing survey of all metalworking plants in the country employing 20 or more. It includes details on types of metalworking operations by states, metalworking employment by counties, and number of metalworking plants by counties.

Sources are practically limitless. The good researcher should have no trouble making up a list for his own use similar to that compiled by marketing researchers at Johns-Manville Corp. (See Page 88.)

From Quantity to Quality

The sources discussed usually can fulfill the quantitative goals of market research, but qualitative information often calls for a questionnaire survey of the market.

Mr. Crisp sets forth seven types of information you can find out with this technique:

1. Facts—such as whether the respondent does or does not own your product or how many he owns.

2. Quasi facts—response that re-

Business Press Helps the Marketer

BUSINESS PUBLICATIONS are one of the best sources for both quantitative and qualitative information on markets. One of their least publicized and most valuable services is the preparation of special market studies.

Example: On May 10, STEEL's Market Research Dept. sent out a questionnaire to determine the market for different types of material handling equipment (4005 original recipients of STEEL in metalworking plants employing 20 or more persons received it). The sample was selected from all major subdivisions of the metalworking industry in the two-digit SIC classification.

The random sampling represented the universe (37,678 executives in 27,012 plants listed in STEEL's continuing census of the metalworking industry) in size of plant, geographic location, and title of interviewee.

By the cutoff date on May 28 (it's best to give about two weeks to reply to a questionnaire), 1159 usable replies were in hand. They were weighted and projected to the characteristics of the universe. The reliability and stability of the sample were found to be well within accepted statistical standards.

Results show which types of material handling equipment are used in total number of plants and industry by industry.

No attempt was made to break down the findings by geographic area or plant size, although it could be done with a larger sampling. In addition, it does not represent the total market because nonmetalworking plants were not included.

This type survey, used with a company's own sales records and other facts gathered from industry associations and the government, can help pinpoint the sales and promotional efforts of the manufacturer.

lies on memory, such as when he bought the product.

3. Penetration of information—a measure of awareness of the product and its impression on the respondent.

4. Opinions—what the respondent thinks of the product.

5. Attitudes—his preference for the product.

6. Future action planned—his intentions to buy or not to buy.

7. Reasons—the why behind the buying decision.

As in the product survey, a researcher has three ways to get such information in a market survey: Direct mail, telephone, or personal interview. In any case, the questionnaire must be designed to get the information with the least amount of time and effort on the part of the interviewer and his respondents. (To find out how to get the most out of a questionnaire, see STEEL, July 14, p. 108.)

Which of the three methods you use will depend on the time, money, and personnel available to do the survey. Because it is a great deal more expensive to secure market information through this technique than through statistical analysis, it is important that each step be planned carefully.

Another big problem involved in the survey technique is selection of respondents. Your records are good sources. But you should go beyond your customers. Several good sources are readily available. Many states and cities have industrial directories listing companies by product, location, and name. Chambers of Commerce are good sources. Business publications often supply lists, and some trade associations will give you their membership rosters. At least a dozen fairly good industrial lists, such as Thomas' Register of American Manufacturers, are available. Sometimes, a newspaper clipping bureau can be of help.

It is of prime importance to send the questionnaire to an individual, not just a title.

Spotting Trends

If you want to determine trends in the market, one method worth considering is the survey. By querying the same list twice or more, it is possible to detect shifts in conditions by comparing results. STEEL uses the technique in its quarterly surveys of the component and metal industries.

The names of purchasing agents are selected on two bases: Plants of all sizes and geographic distribution. They are picked from our subscription list and directories of industrial and trade associations. The questionnaire format is the same for each mailing, establishing a recognition factor. Over a period of years, the list has undergone only minor changes to allow for transfers, deaths, promotions, or noncooperation. This technique has made it possible to chart trends in inventories.

Finally, Action

The market researcher can come up with the finest material obtainable, but his efforts will be in vain unless one final step is taken: Action. While the sales department probably makes the most use of the market researchers' efforts, the really heads-up organization will find many ways to put the results to work.

In taking action, one important point should be kept in mind: Useful as it is and despite its widespread acceptance, market research by itself cannot be a complete substitute for sound managerial judgment. It is an aid. Combined with the know-how of the experienced executive, it can be one of the best tools management has in its efforts to remain competitive in changing markets.

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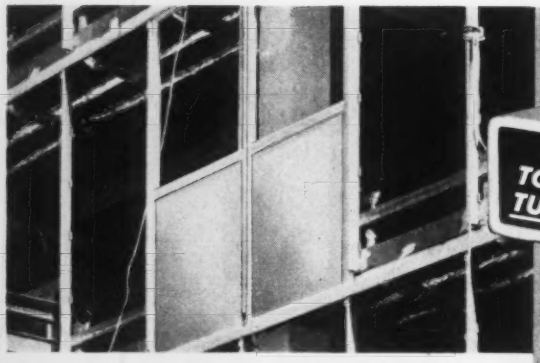

In curtain wall framing, welded steel tubing fabricates readily—joins easily—saves weight.

As conveyor rollers, miles of *welded* steel tubing are used each year for simplified fabrication, rugged strength and light weight.

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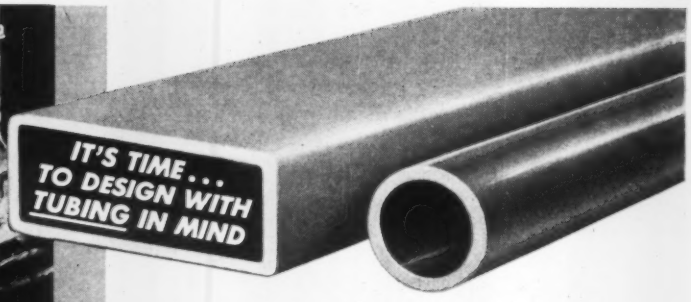

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STEEL

August 18, 1958

Technical Outlook

INSTANT PARTS—Explosives are being used to forge, extrude, and compact powders into intricate shapes. One outfit even cuts big billets with a bang. Several firms use the process to form aircraft parts on a production basis. Experts warn it's no business for an amateur, but evidence indicates it's well worth looking into if you have a tough job that won't respond to normal treatments. (See STEEL, Aug. 25, for a staff written progress report on this fascinating technique.)

LIQUID METAL RESEARCH— The eutectic alloy of sodium and potassium (called NaK 77) shows promise in aircraft hydraulic applications. A study by R. H. Blackmer, General Electric Co., Schenectady, N. Y., found that many common materials, notably low carbon stainless steels, are compatible with NaK 77 at 1000° F.

FOUNDRYMEN TAKE NOTE—A Dutch invention uses two belts to move bulk materials (like sand) in a steady stream. (It's the same principle as that used for open-hearth dolomite guns.) The claim: 60 tons 60 ft in 60 minutes. Force and direction are accurate—the device can deliver the stream through a window 35 ft high.

RADIOTRACING TOOL WEAR— Using a radioactive cutting edge is said to be many times faster than conventional tests for tool life. You start with an irradiated tool and measure the amount of radioactivity in the chips you remove—the more there is, the greater the wear. For more information, contact machine tool makers and nuclear testing outfits. Many are set up for this service.

MAKE MATERIALS TO ORDER—Prof. Arthur von Hippel, Massachusetts Institute of Technology, Boston, believes that engineers and scientists should increase efforts to discover possible new properties resulting from manipulation of atoms in a material. He points out that often inherent qualities are not appreciated. Present tests do not measure these qualities in a material; rather "they tend to emphasize the effects of the fly that accidentally got into the compound." Design, he says, should be from the atom up.

OZONE ON INCREASE—Severity of the ozone problem is growing. One auto company found that three months' outdoor exposure of rubber parts at its California plant caused more cracking than its specification lab test. Concentrations of 100 parts ozone per hundred million parts air have been measured in Los Angeles. Result: Some auto firms have switched to neoprene and Hypalon (made by Du Pont) for parts like ignition wire jackets, hose covers, door weatherstrip, spark plug boots, and convertible tops.

MAGNET CONTROLS HEAT— An alloy that gains and loses magnetic qualities with changes in temperature is being used to control new soldering iron. It holds 700° F within ±2 per cent by making and breaking the electrical contact. Weller Electric Corp., Easton, Pa., which will make the unit, isn't identifying the alloy.

WASHABLE MOTORS— New designs promise savings of millions of dollars for motor users. Developments in insulation have led to a moisture resistant type, expanding the field for lower cost, open-type motors. They can be hosed after each operation to remove dirt from the windings and vent openings, states Allis-Chalmers Mfg. Co., Milwaukee.

GRAPHITE SKIN— Instead of protective enamel coating which may drip and chip, Remington-Rand Div., Elmira, N. Y., Sperry Rand Corp., now dips typewriter parts in a dispersion of colloidal graphite, then bakes them to set the finish. Although thinner than an enamel coat, the graphite coating not only protects the parts against corrosion but lubricates them as well.

Metalworking Outlook—Page 39 Market Outlook—Page 129

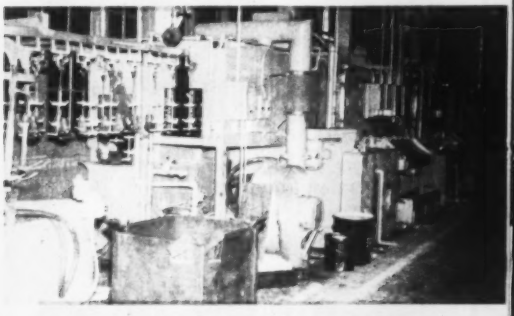
How We Beat the Cost Crisis

In addition to the production savings, change in methods cut tooling requirements. Three cribs and five attendants do job which formerly required nine cribs and ten attendants. This article is one of the top entries in the Cost Crisis Awards Competition. Another will appear in next week's issue

New Line Has a Three-Year Payoff

Natco machines and portable washer are all run by one operator

Four Burgmasters and a washer are positioned for one-man operation



Detrex washer and phosphate finisher have capacity of 800 parts an hour

ANYTIME you have to drill and tap a wide variety of holes in short-lot production, it can be costly.

Production men at Zenith Carburetor Div., Bendix Aviation Corp., Detroit, found this out when they had to process carburetors for heavy truck, tractor, marine, and industrial gasoline engines.

Old Method—L. E. Fraver, assistant to the general manager, says the operation used to be done on hand-fed machines, with manual transfer. Here's how it went:

The cast iron parts were worked on turret lathes. In some instances, parts were put on heavy-duty drills at low speeds. Hand-fed Natco drills worked some group holes where center distance (1 in. or more) permitted. All other holes, and all tapping, were done on hand-fed drill presses.

When castings had to be washed, they were moved to conveyor belt type equipment requiring extensive hand blowing and handling.

Phosphate finishing was done by hand in tanks and barrels.

The Solution—Mr. Fraver and his group ran cost studies and estimated that new equipment could save the company 5 to 60 cents on each casting. Runs on the first pieces of equipment installed showed savings of 10 cents to $1.01 per casting. Result: Management approved further purchase requisitions.

About $317,000 was spent to set

Before and After Unit Production Cost for Carburetor Castings

OPERATION	NUMBER OF OPERATIONS	NUMBER OF SPINDLES	NUMBER OF JIGS	STANDARD HOURS	COST PER 100
OLD METHOD					
Natco (old machine) 3 Setups				0.03294	
Drill line	30	60	59	0.86070	
Countersink 14 holes	1	1	—	0.02958	
Tap line	4	12	12	0.13872	
Tap line	1	1	1	0.01137	
Drill line	1	3	2	0.04421	
Line reamshaft	1	1	—	0.01321	
TOTALS	**38**	**78**	**74**	**1.13073**	**$177.48**
NEW METHOD					
Natco transfer	1	—	1	0.00624	
Natco transfer	1	—	1	0.03268	
Natco transfer	1	—	1	0.03049	
Burgmaster (4 machines)	1	—	4	0.02682	
Drill lines complete	21	35	34	0.29033	
TOTALS	**25**	**35**	**41**	**0.38656**	**$ 77.46**

SAVED:

Operators	13
Drill line spindles	43
Jigs	33
Standard hours	0.74417
Cost per 100 units	$100.02

up banks of Natco, Burgmaster, Barnesdril, and Buffalo machinery, five portable in-process washers, and a monorail Detrex washing and finishing system.

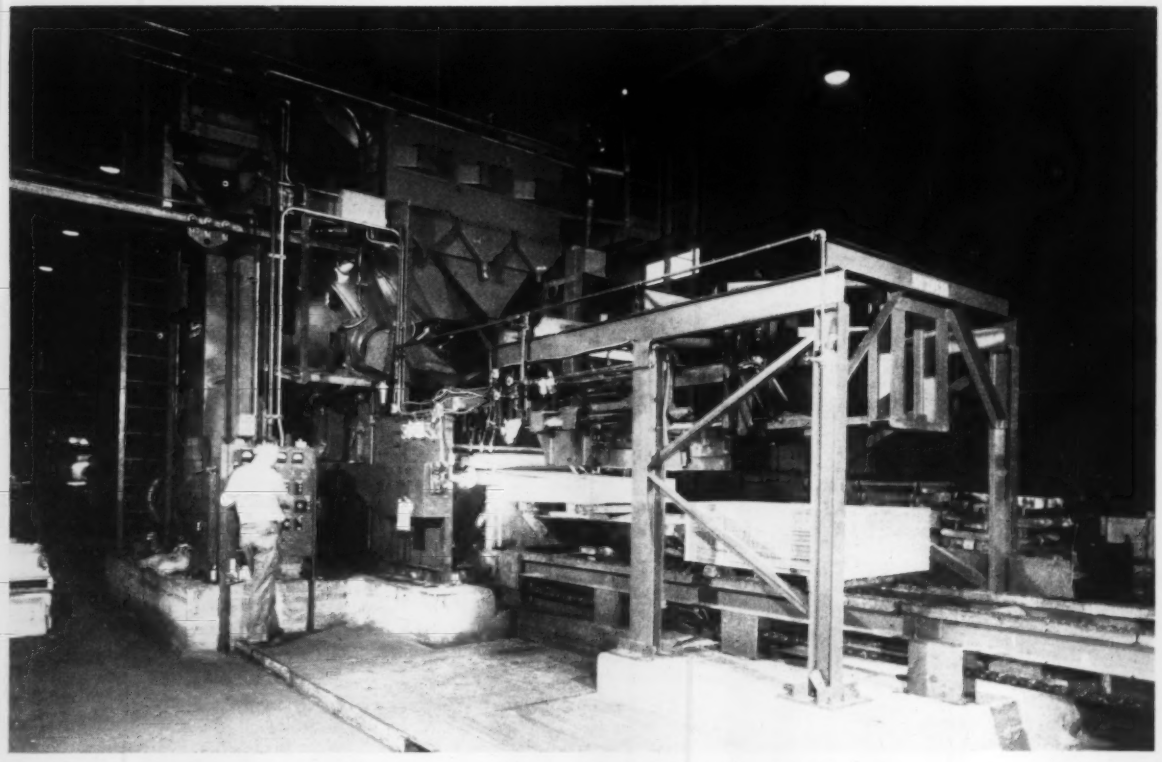
New Method—Castings are bored and faced on the Barnes machines (one operator works two power-fed machines). H-6 Natco drilling and tapping machines and Burgmaster 2BL hydraulic indexing machines are in the new line.

The only holes that are run on drill presses are angular, and they're done on the Buffalo power-fed machines.

The Natco machines have hydraulically operated transfer slides. Set at 90 degrees to each other, one operator can run two machines.

The four Burgmasters process all holes where a series of operations must be done. Example: Drill to chamfer, face boss, counterbore, tap drill, step drill, tap thread, and press bushing. The machines are arranged in a distorted diamond pattern. One operator runs all four. When the parts are completed, he puts them on a gravity chute that feeds a portable, automatic washer.

Finally, parts go through a Detrex combination three-stage washing and phosphate finishing system on a monorail conveyor. One operator can wash and phosphate the castings at a rate of 800 an hour. Five operators formerly were needed.



At the entrance to Rotoblast machine, sheets are picked up and fed by a magnetic device. Sheet stacks arrive on conveyor at right. Sheets are up to 0.165 in. thick

How Far Can You Go with Shotblasting?

Getting the most from this method depends on a knowledge of the surfaces it produces and how to get around some drawbacks. Here are some suggestions from a user

SHOTBLASTING is gaining favor as a way to remove mill scale from mild steel sheets, says G. E. Gollwitzer, plant engineer, Kelsey-Hayes Co., McKeesport, Pa.

Unless tonnage is too low or the scale too hard (a rare occurrence), he finds it less expensive than other methods his plant has tried.

Suggests Precautions — Shotblasted finishes can play hob with tools and dies if you're not prepared. Here are the principal problems:

1. Loose material (probably pulverized scale) clings tightly to the surface, possibly through polarity. (The quantity is altered greatly by the kind of abrasive and the machine ventilation.)

2. The metal surface is raw. In a sense, it's too clean. (Leftover pickling salts from subsequent treatment provide an antiweld barrier which reduces the cold welding you get from high pressures in stamping and drawing.)

3. The surface is irregular. It may not be particularly rough, say 160 microinches rms, but it can cause tool wear. (The shot impacts probably produce tiny, sharp ridges which penetrate lubricant films easily.)

Remedies—To correct those drawbacks, it's important that you know what will be done to the steel after surface finishing. If it is simple forming with large radiuses and dimensions with loose tolerances, you won't be too concerned about the type of surface. If it's severely worked with intricate details, you'll have to take considerable care to check the effect of the shotblasted surface on tooling.

The most extreme correction method is a short pickle after shotblasting. It is expensive and often

inconvenient, but it works.

Brushing removes loose scale and knocks off sharp edges, but it doesn't improve surface rawness. A moderate brushing adds less than 15 per cent to finishing costs.

If you still feel the need to do something about the raw surface, change to a lubricant that forms a phosphate coating. In extreme cases, a full phosphate coating may be justified.

A hard dry soap is a cheap way out. It costs less than wet drawing compounds, and you can put it on directly after blasting.

Choosing Shot—The best abrasive size is the smallest one that will do the work. The reason: More shot can be thrown by the equipment.

A tough scale requires large shot, so if you don't change shot size, the machine operates at less than top efficiency on normal scale. Kelsey-Hayes has found that it's important to check shot size regularly, as well as to make proper adjustments of scavenging air.

Since both shot and pulverized scale are fine, there is no need for expensive classifiers like those used in foundry machines.

Cites Experience — Kelsey-Hayes makes wheels for cars, trucks, and tractors, plus a wide variety of aircraft parts.

The largest sheets at the McKeesport plant are 48 by 96 in. Thicknesses are 0.120 to 0.165 in.

A Pangborn shotblaster handles about 6000 tons of sheets a month. Speed is 69 fpm.

Cut lengths are fed into the machine from stacks by a magnetic feeder. Shearing, press forming, rolling, and sizing produce rims. Spiders are pressed, then welded to rims. After the valve hole is pierced and holding lugs for covers are formed, the wheels are Bonderized and painted.

What's Ahead—The process will become much simpler, and the cleaning cost per ton of steel will be reduced. The number of square feet which can be cleaned with a blasting wheel is going up.

Today's process is still not quite universal enough to interest mills in changing entirely from "pickled and oiled" to "blasted and oiled." But blasted stock is suitable for many more uses than are generally known or accepted.

Hinges for eyeglasses are ready to install when they come from the Intercast die. Separation lines between the hinge elements are barely visible (bottom right)

Jointed Parts Are Diecast

Small, movable products are made in one step. The process eliminates assembly and finishing operations. Hinges for eyeglasses illustrate possible savings

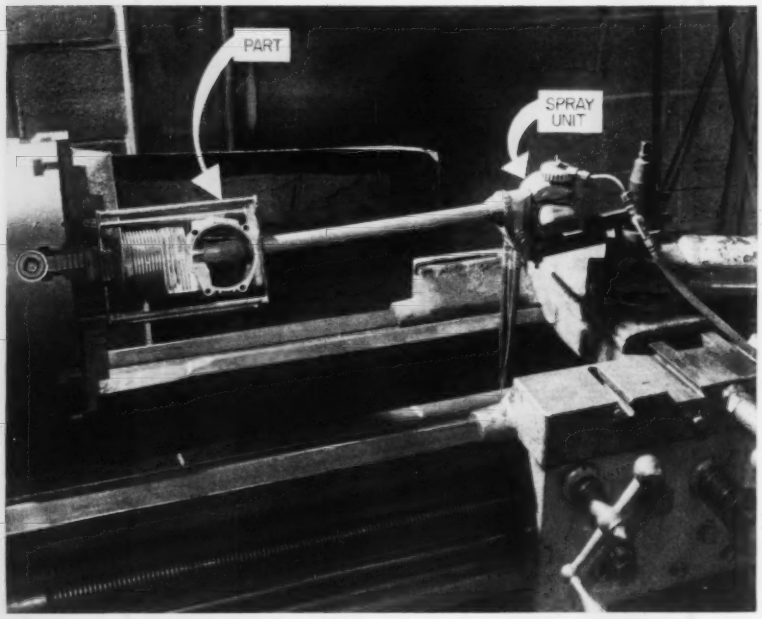
ARTICULATED PARTS are ready for use after being diecast by the Intercast process developed by Gries Reproducer Corp., New Rochelle, N. Y. The assemblies can be up to 1½ in. long and weigh as much as half an ounce.

Example: A hinge of eyeglass frames made of corrosion resistant zinc alloy. The number of parts needed is cut one-third, and production is increased 25 per cent. Surfaces are finished by low cost barrel techniques.

One-Step Assembly—A pressing operation anchors teeth (molded on the studs) into mating holes in the temples and frontpiece. The process guarantees a close fit (see photo) and assures uniformity of each part.

Formerly, hinges were made by cutting extruded stock, milling the slots, forming riveting and hinge pinholes, and assembling the halves.

Other parts made by the Intercast technique are self-aligning bearings, hasps, ball joints, pulley and swivel combinations, and continuous interlinked chains.



An engine cylinder is being sprayed with a metallic coating. The spray nozzle is inside the part

Beefing Up Aluminum Parts

Metallic coatings are sprayed on them to improve their corrosion resistance and toughness. The coating forms a molecular bonding. Process has many applications

WEAR and corrosion resistance are being added to aluminum parts by spraying them with molybdenum and other hard metals, says Herbert S. Ingram, Metallizing Engineering Co. Inc., Westbury, N. Y.

Example—A 4 by 6 in. aluminum cylinder liner for automotive engines is hard faced: It is cleaned by sanding, then mounted in a trunnion rotating device that turns the horizontal cylinder at 115 rpm. It indexes 180 degrees so the part is alternately sprayed from either end.

The cylinder is preheated to 200° F and sprayed with 0.002 in. of molybdenum. A 0.002 in. coating of special low alloy steel (designed for minimum shrink during spraying) is added next. The coatings are built up to 0.012 in.

External cooling by an air blast keeps the temperature of the cylinder below 200° F. Grinding and honing bring the coating to a finished thickness of 0.007 in.

Cost Figures—Spraying a 2⅜ in. by 3½ in. cylinder with 0.002 in. of molybdenum and 0.010 in. of steel costs about 42 cents. Molybdenum only sprayed to a thickness of about 0.008 in. costs 72 cents.

The figures do not include labor which is negligible when automatic equipment is used. Costs are for air, gas, oxygen, and metals (the chief factor).

Process Properties—The molybdenum coating makes a molecular bond with the aluminum surface. Formerly, hard facing coatings formed a mechanical bond. It was done by roughening methods such as blasting with angular steel grit, machining with a torn surface, grooving, or dovetailing. All the old methods required thick coatings. Spray coatings now may be as thin as you want them.

The bond is free of voids and has good thermal conductivity. Thin coatings on smooth surfaces require little finish allowance, reducing the cost of finishing and the amount of metal needed.

Aluminum castings with thin coatings (0.005 to 0.010 in.) have the thermal expansion characteristics of uncoated aluminum castings. They do not materially change heat transfer properties. Selected areas are coated by using shellac as a masking compound. It is removed by soaking the part in alcohol and using an abrasive vapor blast.

Removing oil is a big problem in metallizing cast cylinders. Vapor degreasing is not adequate, and boiling for long periods may be insufficient if castings are porous. Alternate vacuum and pressure treatments in a solvent have been proposed to solve the problem.

Other Uses—Many types of cylinders have been metallized, including diesel, automotive, free piston, and small appliance types. The list includes solid cast cylinders, aluminum sleeves, and steel sleeves (coated with molybdenum) used in aluminum engines.

Hard faced aluminum has many other uses in the automotive industry, including rocker arms (at wear points); V-pulleys (on the belt track); and as an inexpensive coating on aluminum castings (press fit areas).

Alloyed aluminum castings do not have the corrosion resistance of pure aluminum. Resistance is improved substantially by spray coating with the pure metal. Metal spraying may be the solution to electrolytic corrosion caused by dissimilar alloys in contact.

A widely used procedure for corrosion protection of castings is to grit blast the surface and spray 0.003 to 0.008 in. of aluminum, depending upon the service requirements. The coating is sealed with a phenolic or an epoxy resin.

Operator loads conveyor manually with hoist. Conveyor carries springs through heating, quenching, and drawing. Compactness is achieved by internal ducting

Furnace Line Speeds Spring Output

Modern, in-line arrangement cuts labor and lowers heat treat time for this firm. Over-and-under conveyor belts prevent spring distortion during quenching. Arrangement is compact

A CONTINUOUS harden, quench, and draw line increased coil spring production 400 per cent and improved quality, says Union Spring & Mfg. Co., New Kensington, Pa. Only one man operates the line, vs. the three formerly needed for the batch method.

Automatic Processing—The furnace is capable of handling springs made of bar diameters from ½ in. to 2½ in., weighing from 5 to 385 lb each. Most common alloys used: SAE 6150, A9260, A8650, A8660, and SAE 4160.

Springs move from the hardening furnace through the quench tank, are picked up by a conveyor, and carried through the draw furnace. The line, which handles about 3000 lb an hour, was installed by the Industrial Furnace Div., Sunbeam Corp., Chicago.

Design—The hardening furnace operates at 1600° F and has heating and soaking zones. Temperature is regulated by Leeds & Northrup controllers.

Six gas burners fire into a combustion space above the work. Combustion products envelop the work and are exhausted through side vents below the conveyor. It takes about 3000 cu ft an hour to run the furnace at full capacity.

Handling—Union Spring brings parts to the furnace in tote boxes. They are loaded by hand or hoist onto a cast, alloy link conveyor.

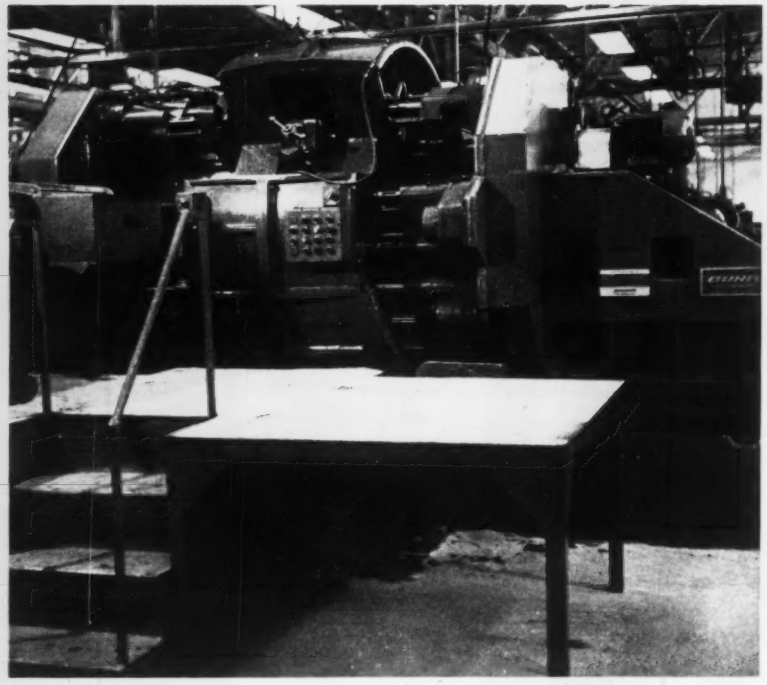
From the hardening furnace, springs roll onto a woven wire belt and into the quenching oil. That eliminates shock or impact distortion. When submerged, it contacts a second wire belt which stops the rolling. It is loose enough to form a kind of pocket—the slack weight holds the spring firmly until completely quenched.

The quench bath is held at 140° F by an evaporative cooler.

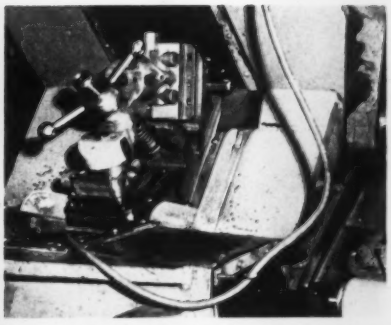
Circulation Insures Uniformity—From quenching, springs pass through a draw furnace that can operate at 1000° F. It has three temperature zones. There are no external ducts or combustion chambers.

Fans circulate 70,000 cfm. Each one pulls air up through the load. After passing through the fan, it is forced down the outside of the furnace and through the burner combustion area. Internal shrouds are said to make the furnace more compact.

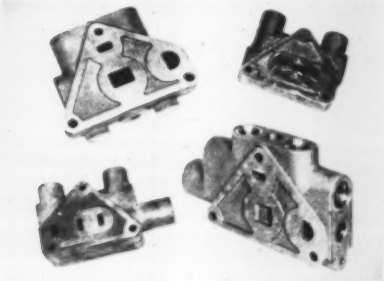
The conveyor design meets Union Spring's needs of absolutely flat handling at all times and a loading capacity of 100 lb per square foot.



Ten stations on this trunnion-type machine carry valve bodies past 58 machine spindles. Each part requires from 19 to 37 machining operations—all, except load and unload, are automatic



This is the load-unload station where parts are clamped in fixtures



These valve bodies are typical of the 36 types that are drilled, bored, reamed, and tapped on the machine

Special Machine Handles 36 Varieties

Versatility makes it possible for aircraft manufacturer to replace six standard machine tools. Result: Production is up; part costs have been trimmed $1.75

WHEN a special machine won't pay for itself on a short-lot job, refigure the economics and consider a machine with the flexibility to handle a family of parts.

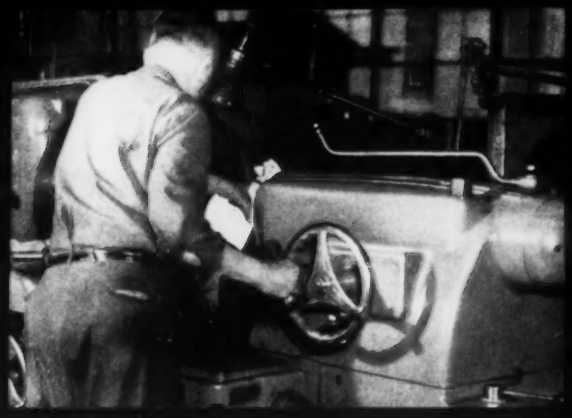
That's what manufacturing experts did at Cessna Aircraft's Industrial Products Div., Hutchinson, Kans. Result: Cost per part has been cut $1.75, says E. E. Newman, assistant manufacturing engineer. The parts belong to a family of 36 types of hydraulic valve bodies. Each requires 19 to 37 machining operations.

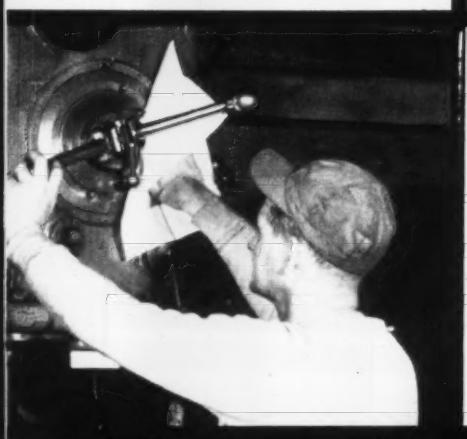
The machine replaces six, single-spindle radial drills. Production has jumped from 8 to 50 parts an hour.

Road Maps—While designing the double-end trunnion machines, engineers at Buhr Machine Tool Co., Ann Arbor, Mich., correlated machining data for all 36 parts (including hole locations, sizes, tools, and feed rates) to make sure of needed machine flexibility.

Data for each part were put on two simple layout sketches (one for each head), so the operator can tell exactly how to tool each spindle. The sheets are his setup road maps; they also specify the feed to be used, fixture and bushing requirements, and the positions of indexing heads.

Cycle—The operator loads and clamps workpieces in the fixture at the load-unload station. He pushes two buttons, and the ten-position trunnion indexes one position and the two heads start their cycles. Interlocks prevent indexing the trunnion until all tools are cleared—both pushbuttons must be pressed and released before each indexing step. It protects the operator—makes sure his hands are away from the loading station during indexing.





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many
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Mr. Donald Donofrio, Machine Shop Head Foreman of Acme Steel, likes Scott Wipers, considers this specially processed Perf-embossed® surface ideal for wiping radial drill presses, lathes, milling machines, grinders and for general maintenance and clean-up wiping. Scott Wipers are soft 2-ply paper, possessing wiping strength and wet strength.

Scott Wipers keep plant cleaner, eliminate skin complaints at Acme Steel

Acme Steel Company, Chicago, one of the largest producers of steel strapping and strapping tools in the nation, uses Scott Wipers in tool crib, machine shop, tool and die department, welding room and millwright shop. Employees had complained about the "harshness" of cloth wipers laundered with heavy soaps and detergents. Scott Wipers stopped these complaints—because *they're* used once, disposed of in handy containers. Scott Wipers have eliminated collecting, counting, bundling and laundry charges, and according to management:
"The plant is definitely kept cleaner now!"

SCOTT PAPER

An interesting film report by John Cameron Swayze on "Paper in Industry" has just been released. Takes just 15 minutes—your Scott distributor can arrange a showing. He's in the Yellow Pages under "Paper Towels." Or write: Scott Paper Company, Dept. S-88, Chester, Pennsylvania.

See "Father Knows Best" on NBC-TV.

Coal from the Vesta mine moves over this suspension bridge by conveyor belt to meet coal brought by barge from the Shannopin mine. The mixing and cleaning plant is at the far end of the bridge

Coal Mixed en Route to Ovens

Jones & Laughlin finds economies in blending coking coal close to the mines. Huge mixing and transshipping station receives coal by barge and conveyor belt

COAL for Jones & Laughlin Steel Corp.'s coke plants at Aliquippa and Pittsburgh, Pa., now arrives ready-mixed. A huge proportioning plant up the Monongahela River automatically blends coal brought by conveyor belt from J&L's Vesta Mine with coal moving down river by barge from its Shannopin Mine.

For many years the mines at East Fredericktown, Pa., have supplied a major portion of J&L's high grade metallurgical coal. Mechanical loading facilities at the Vesta-Shannopin operation were enlarged after World War II to make it one of the world's largest coal preparation plants. Mixing facilities are the lastest addition to this mechanization program.

Vesta Coal—High volatile fuel from the local mine is unloaded by two rotary dumpers into a common hopper. After initial screening and crushing in a chamber 170 ft below ground, an apron feeder transports the coal aboveground at an average rate of 1300 tons per hour.

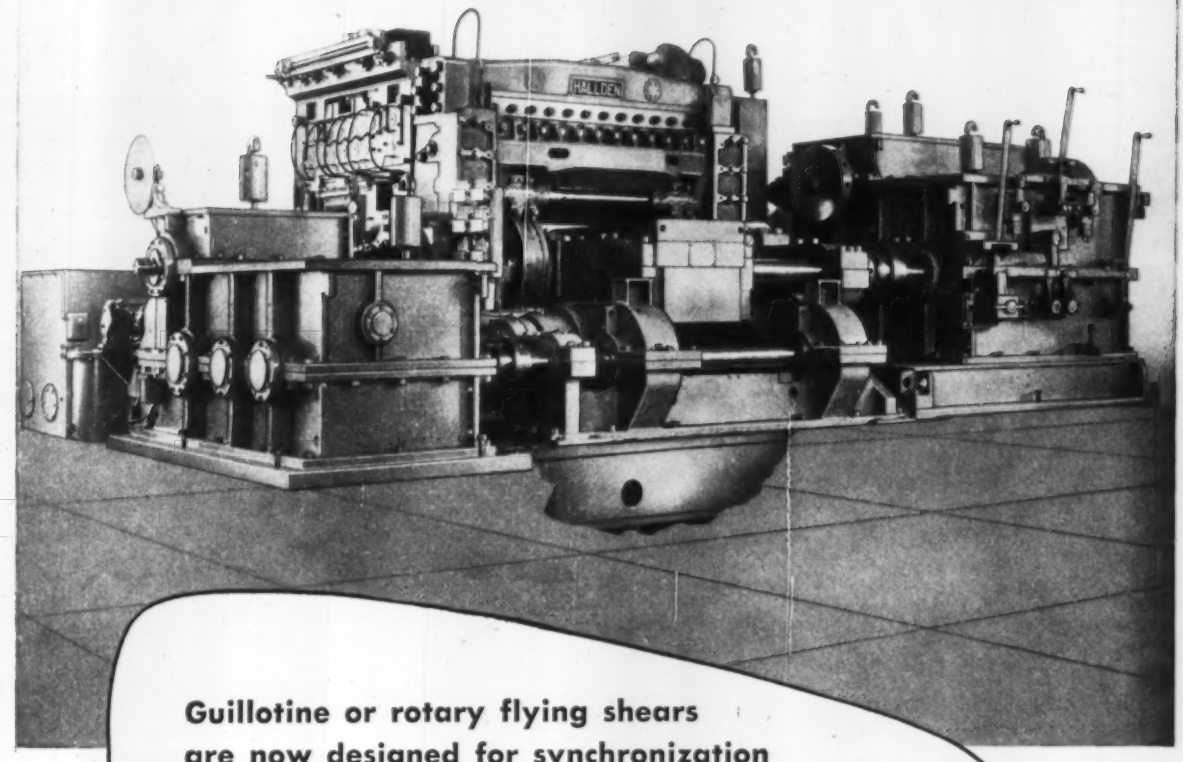
The coal is conveyed across a suspension bridge spanning the Monongahela River on a belt conveyor about 2000 ft long.

There is little storage capacity in this phase of the system. The high cost of storage capacity made it impractical to provide minute-to-minute control of the primary flow.

Shannopin Coal—This fuel is unloaded from barges and transported by belt conveyor to ten bins having a total capacity of about 5000 tons.

(*Please turn to Page* 108)

SYNCHRONIZED *"On the Fly"*



Guillotine or rotary flying shears are now designed for synchronization adjustment without stopping the machine.

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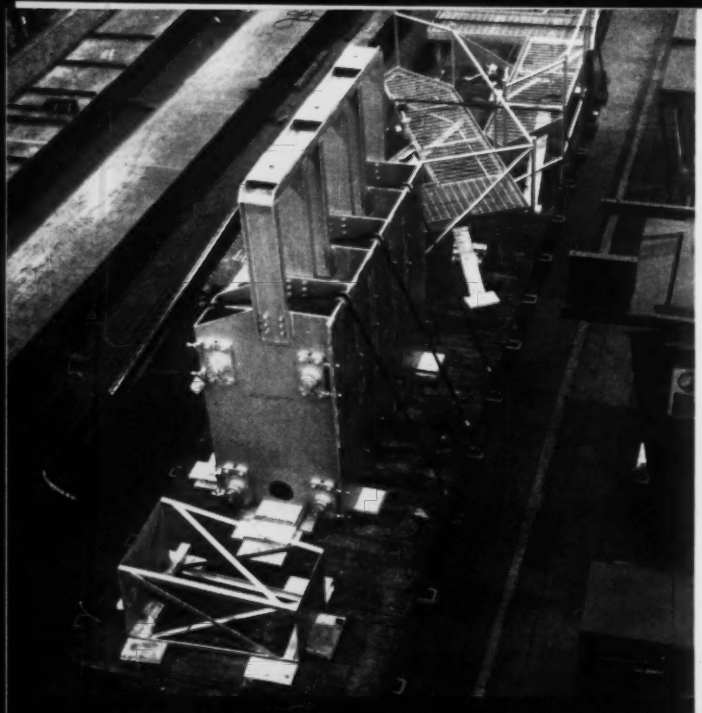
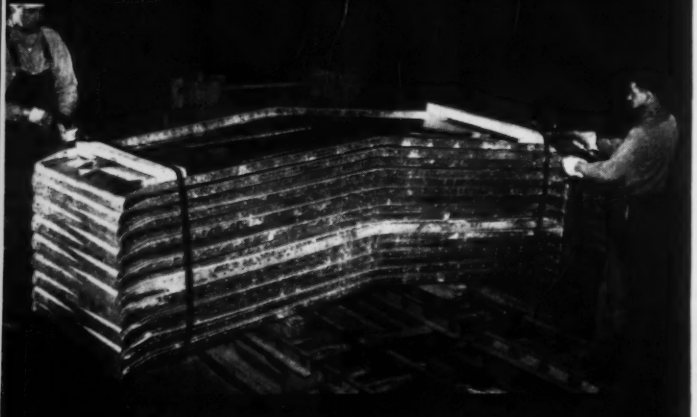


ACME STEEL **STEEL STRAPPING** secures and protects electric furnace for shipment by flat car. *(Idea No. U2-3)*

ACME STEEL **STEEL STRAPPING** unitizes aluminum ingots for better handling and storage. *(Idea No. U6-16)*



ACME STEEL **STEEL STRAPPING** unitizes steel stampings for easier handling and shipping. *(Idea No. U6-20)*

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You can gain important materials handling, protection and storage advantages by applying Acme Steel unitizing and carload bracing Ideas to your operations. Safe, secure packages and shipments result in increased handling speed and labor-materials economies, bringing you important savings and greater customer satisfaction. It's easy to find out how.

Located near your plant is an Acme Idea Man thoroughly experienced in product protection for the primary and fabricated metals industries. He is immediately available to discuss your specific problems and provide hundreds of performance-proved Acme Steel Strapping Ideas, without cost or obligation. The seven Ideas on these pages are included among the Ideas-In-Action Reports your Acme Idea Man will be glad to show you. Among these many Reports—all of which have been developed from actual experiences of dozens of industries—are certain to be Ideas that can be applied to your problems, for better, faster, more economical product handling, protection and storage.

Your *Acme Idea Man can be contacted at the nearest Acme Steel Company office. Simply look under "Steel Strapping" in your classified telephone directory, or send the coupon for full facts and information.

ACME STEEL **STEEL STRAPPING**

ACME STEEL **STEEL STRAPPING** braces loads of wire fencing for safe, secure shipment in gondola cars. *(Idea No. U3-1)*

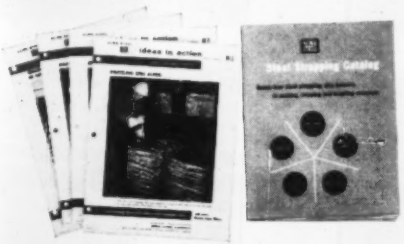
ACME STEEL **STEEL STRAPPING** machine bundles boxes of kitchen utensils for easier handling. *(Idea No. S2-14)*

ACME STEEL **STEEL STRAPPING** palletizes heavy wheel and brake assemblies for fast, mechanical handling. *(Idea No. U6-19)*

ACME STEEL **STEEL STRAPPING** applied with pneumatic tools speeds unitizing of cold-drawn steel bars. *(Idea No. U6-18)*

IDEA LITERATURE

Information packed Acme Steel Idea Literature is available to you on request. You can get dozens of clues to better ways to package and protect your products and plant output.



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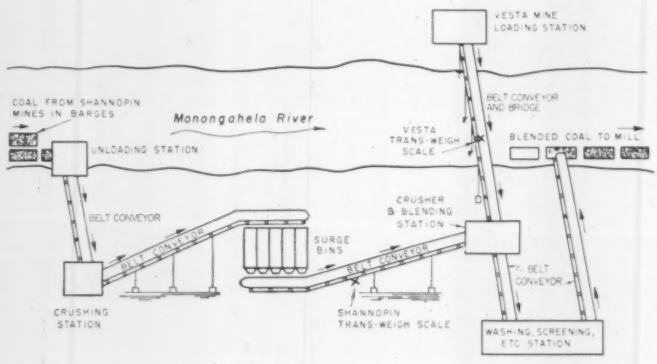
COAL MIXED . . . (*Concluded from Page 104*)



Arrangement of J&L's Vesta-Shannopin coal mixing and cleaning operation

Ample storage capacity was chosen to permit two-shift operation of the preparation plant with one-shift unloading of the barges. Since there is always excess Shannopin coal available, accurate proportioning is done by controlling its flow in proportion to that of the Vesta coal.

Each bin is equipped with a belt feeder. Speeds of all feeders are controlled by a single rheostat, but up to five of the feeders may not be in use at any one time. A collection belt carries the Shannopin coal from the feeders at an average rate of about 600 tons per hour to an inclined conveyor that in turn transports the material to where the lines join. The resulting mixture is conveyed to the preparation plant for final processing.

Automatic Measuring—Mixing is electronically controlled by a measuring system engineered and built by Trans-Weigh Co., Wayne, Pa. It measures the weight of material on a short section of the belt, and also the belt speed, then multiplies these variables electronically to obtain the pounds per hour being delivered.

The three primary components of the system are: 1. An electric tachometer generator driven by the return belt which measures belt speed and supplies current to the weighing system. 2. An electric strain gage load cell which measures the belt load. 3. A modified electronic potentiometer which indicates and records an instantaneous rate of flow and includes an integrator which displays total tonnage on a small counter.

Load Cells—The Vesta flow is detected by a Trans-Weigh scale comprising a load cell and tachometer generator located part way across the bridge. The Shannopin flow is measured by a similar scale located just after the loading point on the inclined conveyor.

Location of the Vesta detecting devices was selected so as to make the time lags approximately equal between each scale and the junction point. So, when Vesta tonnage varies, the control system immediately makes a proportional change in the Shannopin feed rate, and the two changes meet at the junction point at the same time.

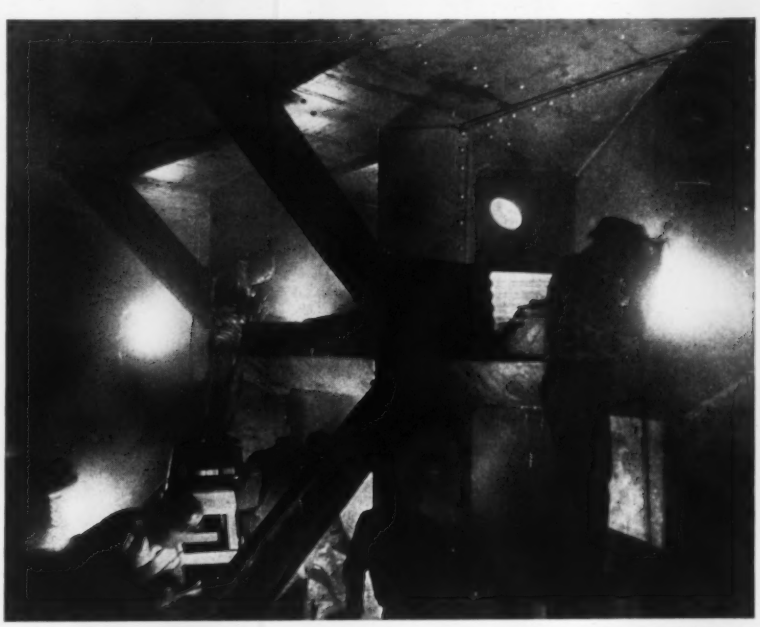
Readout — Both feed rates are transmitted to a central control station near the junction point. Primary output and totalized tonnage are also retransmitted about another 1000 ft to a duplicate instrument in the superintendent's office.

Variations of 10 per cent over periods of about 10 minutes are frequent, and peaks of 25 to 30 per cent are occasional. The control makes the Shannopin feed follow these variations.

Besides providing a uniform, high quality mixture, the Trans-Weigh system has secondary advantages. It is completely automatic, so that operators do not have to switch to manual control when stopping or starting the conveyors.

Location of recording and integrating instruments in the superintendent's office permits simplified supervision.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*



Lincoln Electric Co.

WELDING A HOPPER CAR gets done faster when 13 operators work together. At the Greenville Steel Car Co., Greenville, Pa., each man completes his assignment in the same amount of time. Iron powder electrodes and alternating current are used, providing maximum speed with minimum blow. After welding, cars are put on trucks and moved down the line for more subassemblies

INDUSTRIAL GASES... NATIONWIDE... FROM AIRCO

Air Reduction gases, among them oxygen, nitrogen, argon, hydrogen, helium and carbon dioxide are vital commodities in the metal-working industries.

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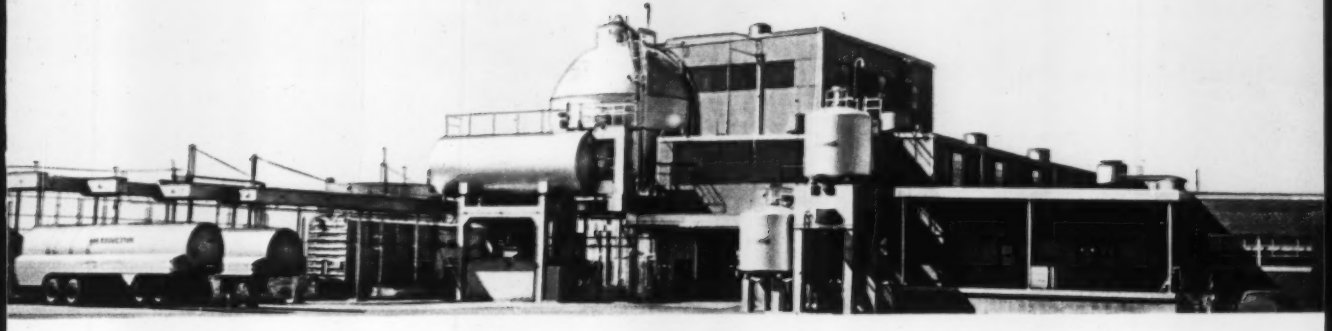

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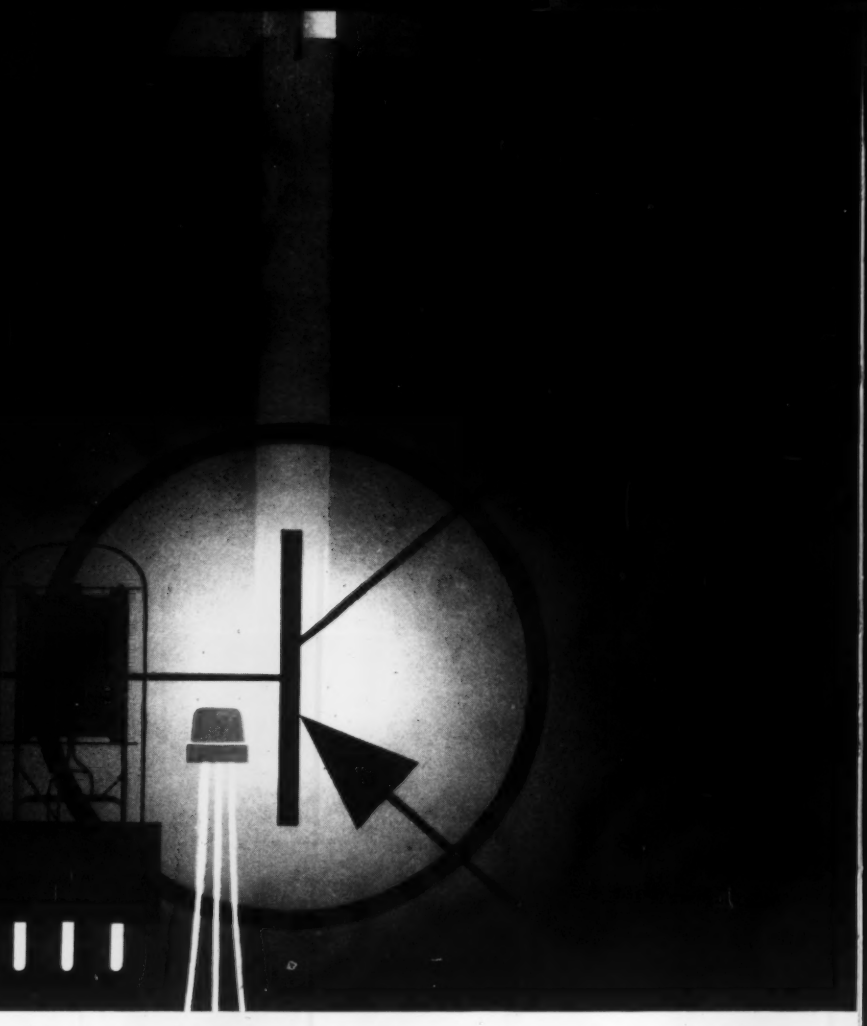

in electronics . . . Air Reduction gases provide the right environment

One of the significant uses of Air Reduction gases is in the creation of special "environments" wherein a delicate production or testing operation may take place. For example, in electronics, germanium and silicon crystals for transistors are "bred" in atmospheres of Air Reduction nitrogen or argon with purities of 99.995%.

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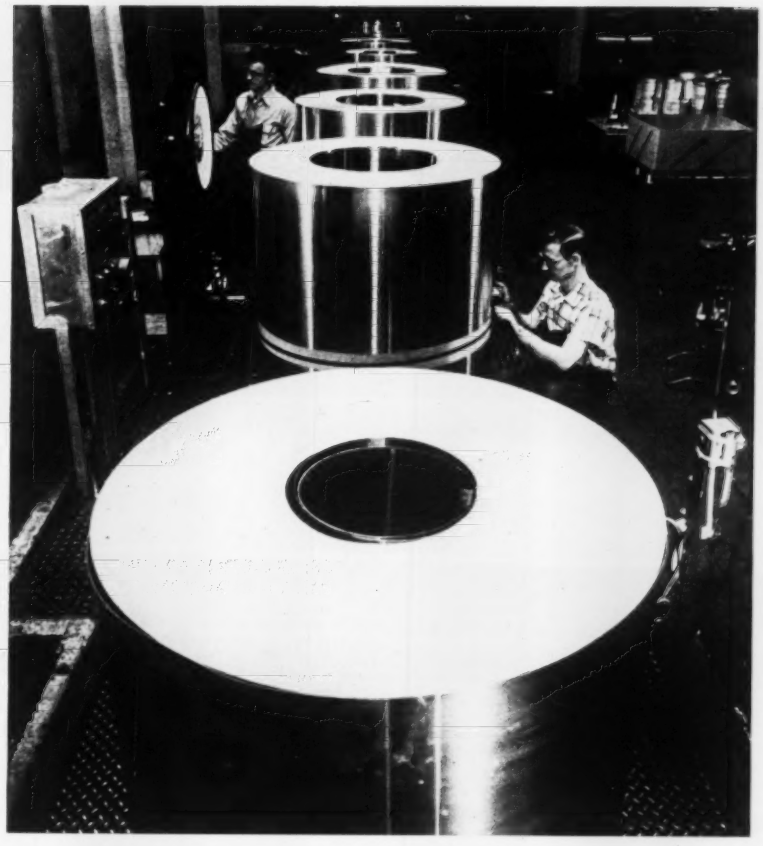


Aluminum coils (up to 10,000 lb) are weighed and inspected

Conveyor System Saves $144 a Day

Integration of inspection and packaging of coils with an improved material handling system has resulted in better service to the customer. Method is safer for workers

A CONVEYOR system for the inspection and packaging of aluminum coiled sheets is saving $18 per operating hour, estimates Kaiser Aluminum & Chemical Corp., Ravenswood, W. Va. The previous system did not use conveyors.

Savings stem from: 1. Eliminating five delay points and the lost time of waiting for cranes and fork trucks. 2. Reducing the distance traveled by the materials (up to 655 ft). 3. Cutting the space requirements by over 3600 sq ft. 4. Eliminating one overhead crane and two power trucks. 5. Improving co-ordination of the inspection and packaging functions by central supervision.

Better Service—Coil weights are recorded by automatic scales built into the line. The customer with critical weight requirements is assured that his order is filled within the specified tolerances.

Knowledge of the weight of each coil aids material handling and utilization in the customers' fabrication plants. Inspection checks gage and width tolerances, surface appearance, and other customer requirements.

Safety Is Built In—The system's layout eliminates operation of cranes or power trucks within 15 ft of the crews. The unit is designed to prevent the danger of getting feet, hands, or clothing caught in moving parts.

Conveyors cannot advance until a series of switches are in the "on" position and the operator sounds a bell. T-bars are placed between the rollers so the packaging crews can walk on top of the conveyor without danger of falling.

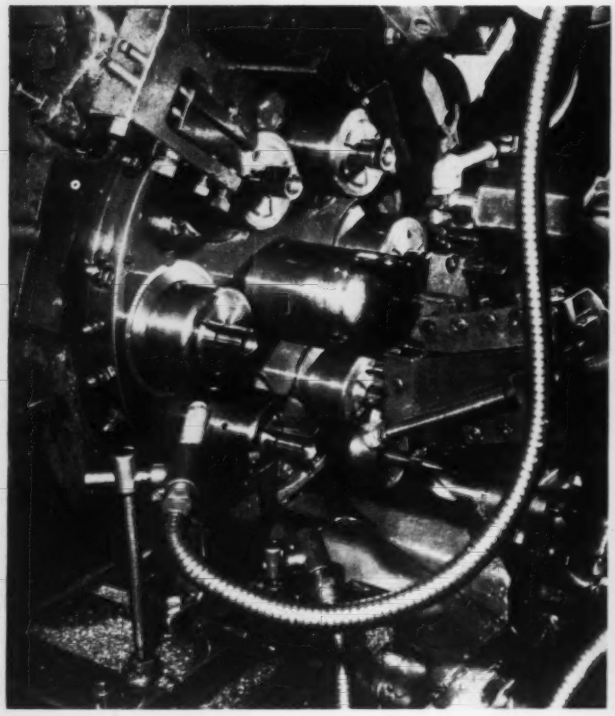
Equipment Used—The inspection conveyor (123 ft long) handles coils up to 10,000 lb. (The maximum load is 110,000 lb.) The unit (powered by a 25 horsepower motor) runs at speeds up to 40 ft a minute.

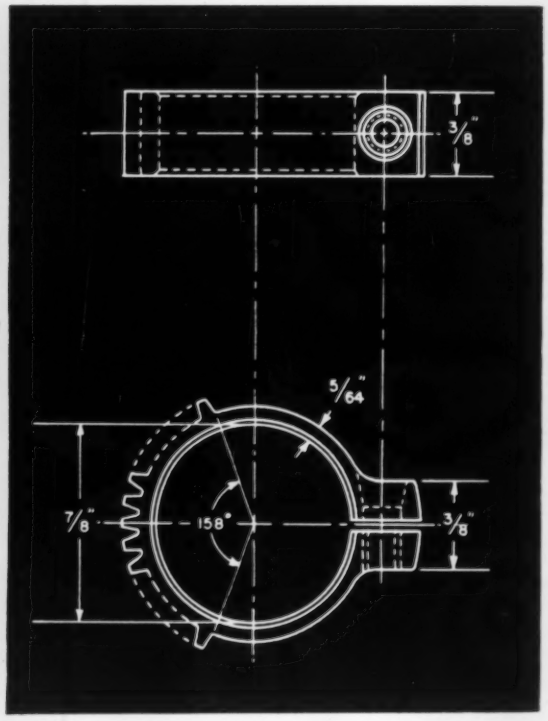
Coils are moved to the inspection area from the finishing operations. They are placed on the line by an overhead, 5-ton crane.

The conveyor is indexed so that it stops every 54 or 72 in. Metal samples are cut as the coil moves before the inspection crew. Samples are rolled out for final visual inspection. Acceptable coils are marked with a lot number and proper alloy, temper, and gage designations. Rejected metal is marked with a salvage ticket.

A hydraulic lift elevates the coil 1 in., placing it on the scales. At the end of the area, coils are lifted to skids on the package conveyor. Coils for salvage are lifted to one side.

Final Steps—The 78-ft packaging conveyor works with gravity feed. Coils are packed in the wrap best suited for the product and specified by the customer. The crew pushes the loaded skids along the line as they wrap and band the stock. Coils are marked and moved to the shipping area.





Hot extruded steel bars are cut into blank rings on a Gridley automatic screw machine. Only external machining necessary is shaping the teeth (see drawing at right)

Machining Time Trimmed 22%

Split clamping rings with toothed segments are now made from hot extruded, cold drawn steel bars. Three operations, two milling and one grinding, were eliminated

AMERICAN Bosch Arma Corp., Springfield, Mass., used to machine split clamping rings for its diesel-fuel injection pumps out of standard round stock.

Now, the parts are made from hot extruded, cold drawn C1144 bars at about 18 per cent less cost. Machining time has been cut 22 per cent. The rings are stronger than before, although they are dimensionally the same as when machined from C1118 and heat treated.

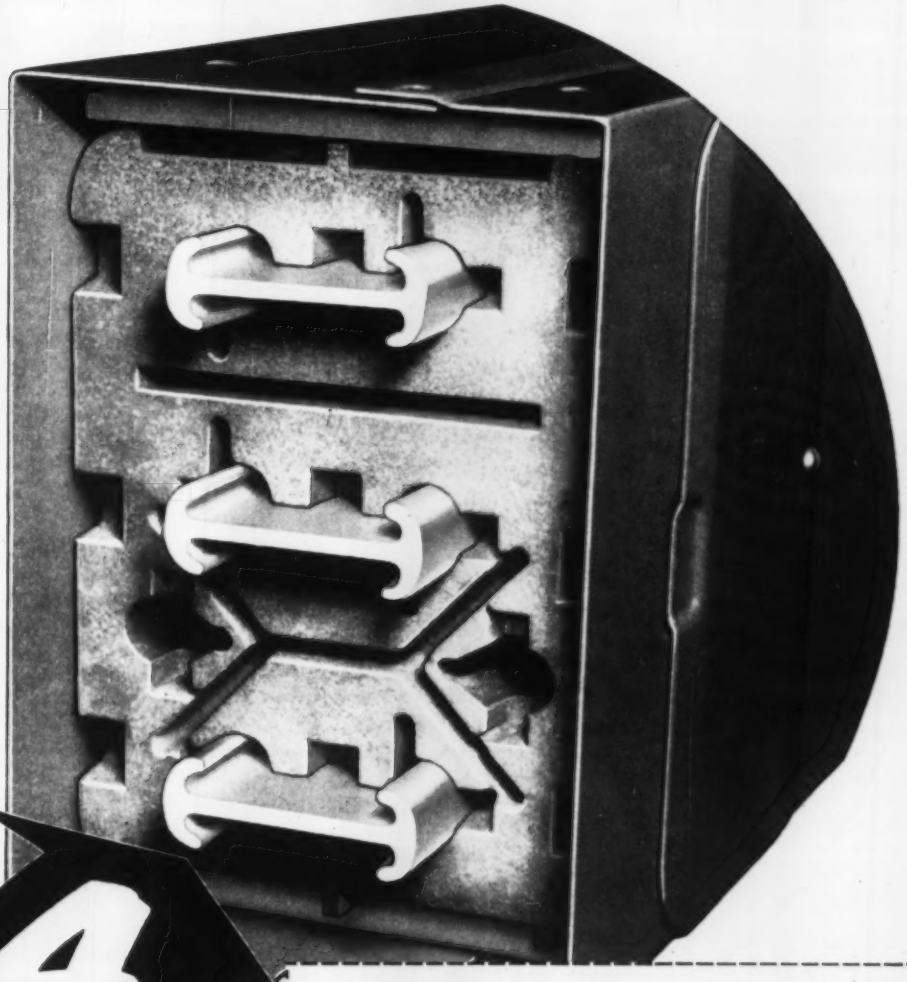
High Production Item—American Bosch Arma sought a simpler way of making the rings because the quantities needed could bring substantial savings. A ring is required for each of one to eight pumping elements in fuel injection pumps. They are parts of the control linkage that regulates fuel flow to each engine cylinder.

The solution was worked out with the help of engineers from Jones & Laughlin Steel Corp. Extruded steel bars 10 to 12 ft long, with a contour that was formerly milled out of ring blanks cut from round bars, are made by J&L. Dimensional tolerances are close enough to eliminate all external machining except cutting the teeth.

Minimum Machining—Blanks 3/8 in. wide are cut from the extruded bars on a 1 5/8-in. Gridley automatic screw machine which does the six initial machining operations the round bars required.

The 15 gear teeth on the 158-degree segment are cut on a Fellows gear shaper. To provide a means of clamping the ring on a sleeve in the pump, a lockscrew hole is drilled through the 3/8-in. projection on the ring and tapped on one side. Then a slot is milled through the center of the projection, perpendicular to the lockscrew holes.

SQUARE D's New Aluminum Plug-In Duct with Exclusive I-BEAM Design!



4 TIMES STRONGER

Square D Company, Dept. SA-23
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Send me Bulletin SD-110 which gives the complete story of Square D's new aluminum plug-in duct.

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SQUARE D COMPANY

All valve bodies are x-rayed to check for inclusions and voids. This piece requires a 1-million volt machine. Operator places film strips in marked areas. Metal tags identify film location

System Ups Valve Quality

QUALITY CONTROL at Cooper Alloy Corp., Hillside, N. J., keeps customer rejects within 0.2 per cent of its production.

The firm makes stainless steel valves for atomic reactors, chemical systems, pickling installations, and similar corrosive applications.

Why It Works—The control system depends on: 1. Selection of high quality metals. 2. Spectrographic analysis of melts. 3. Multiple inspection points throughout the processing. The chief inspector reports to the general manager, not the production superintendent. He has unlimited latitude to develop in-line quality tests.

Reasons for Improvement — Engineering calls its customer complaints an important cog in a system for improving its products. Field testing can turn up difficulties hard to discover on the drafting board.

For example, a major producer of railway tank cars equipped its loader-unloader system with stainless steel plug cocks developed for highly corrosive chemicals. The valves didn't corrode, but some chemicals produced galling. Cooper Alloy developed a new alloy which eliminated the problem. Side benefit: The new valve is finding wider applications in chemical processing.

How It Operates—Inspection first tries to minimize valve defects by watching the composition of purchased materials. Stainless steel valve trim is made from bar stock. Sampling and spectrographic analysis double check the guaranteed analysis of the supplier. A metallographer makes certain the heat treatment is right.

Bodies and bonnets are cast. The analysis of each part in the alloy is spectrographed or analyzed by the wet chemical method.

It used to take 8 hours to get a laboratory breakdown of an alloy. By that time, the melt had been cast. A spectrograph (with densitometer) gives direct readings in a few minutes. The melt supervisor can alter the composition immediately.

Each casting is stamped with its melt number, followed by an internal and external visual once-over.

The valve bodies are cleaned and heat treated. Every load gets a carbide precipitation test, in addition to normal pyrometric controls at the furnace. Valves are also cleaned to remove heat treating scale, pickled, and given a final visual inspection. Bodies are hydrostatically tested at two or three times the ultimate working pressure.

As a last step, bodies are x-rayed by 250,000-volt machines. A million volt x-ray machine or a cobalt 60 gamma ray source checks the heavier pieces.

Machining Watched Closely—Finished castings, purchased parts, and those machined from bar stock all are checked early in the process. Once the machine is tooled up, the first piece is examined by a floor inspector. The job is also checked every 15 or 20 minutes

throughout the run. All valve parts (bodies, bonnets, and components) are carefully gaged. Good ones are stamped to prevent subsequent handling errors.

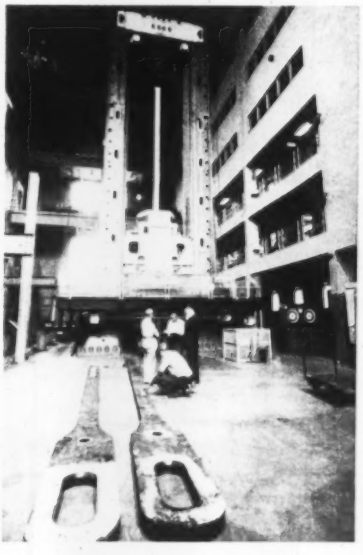
Assembled valves must also pass a hydrostatic test. Inspectors run the stems all the way out watching for sticking and misalignment.

Inspectors do not repair any valve defects. Imperfect pieces are returned for repair or scrap.

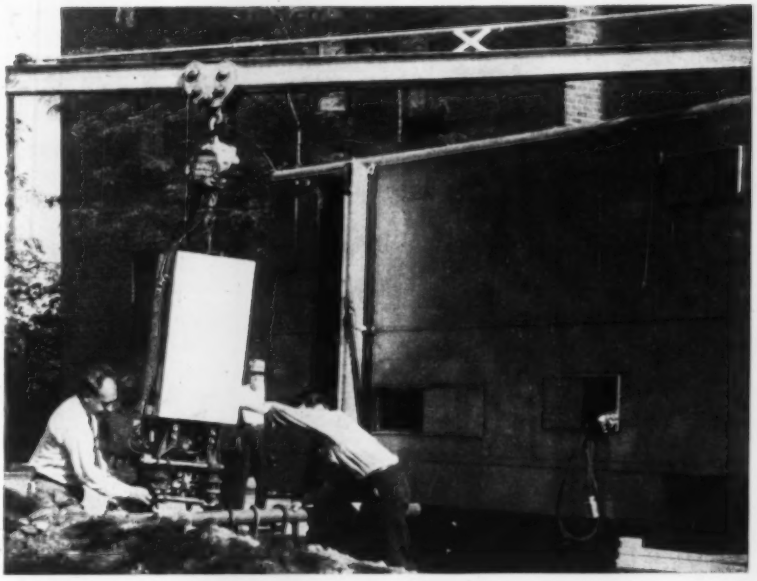
Records Aid Checkup—Daily reports list the number and size of parts inspected, the alloy, and rejects.

A biweekly report summarizes that information. It includes a list of parts, the production, and scrap count. A glance at the summary sheet shows the general area in which a production problem lies. The reports provide the starting point for correction.

Look at the Customer—The machine shop inspection foreman examines returned valves and submits his report to the chief inspector. In most cases he can easily tell if the defects were caused by poor manufacture, misapplication, or misuse.



EYE-BARS locked in the universal testing machine at Lehigh University's Fritz Laboratory, Bethlehem, Pa., broke only after 2,775,000 lb of force were exerted on them. Bethlehem Steel Co. made 592 of the bars to anchor suspension cables for New York City's new Throggs Neck Bridge. The bars being tested weighed 3580 lb, were 33 ft long and 2¼ in. thick



Boom makes it possible to weld pipe in trench

Field Welding Made Easy

Induction heating with a high frequency electric current has improved installation methods for public utility. Mobile unit uses an 18-ft boom for making joints in trench

HIGH FREQUENCY induction buttwelding has cut the time for making pipe joints from 60 to 1½ minutes. The bead is around the outside, leaving the internal diameter full size. Consolidated Edison Co., New York, is using the method to install its electric, gas, and steam distribution systems in congested city streets.

The mobile equipment includes line-up and pressure jigs for handling the pipe.

Welding from a Boom—An 18-ft boom carries the output transformer, work coil, pipe alignment jig, and hydraulic clamps. The unit exerts 2000 to 4000 psi, depending on the wall thickness. The boom makes it easy to use the equipment in a trench.

Argon gas is sprayed around the weld area to create an inert pocket, keeping atmosphere from the butt edges during welding. Additional weld metals are not used.

The unit is moved from joint to joint on pipe in a trench or on the ground. It makes four welds an hour.

A second method, using stationary equipment, is under study. The pipe is pulled through the machine on a special line-up table. When the weld is completed, the next pipe section is pulled into position. This setup will do ten welds an hour.

Equipment Design—Pipe up to 14 in. in diameter can be handled by the equipment which is made by the New Rochelle Tool Corp., New Rochelle, N. Y. An added feature is a device which automatically shuts off the current when the weld is completed.

A 100-kilowatt generator produces single-phase current of 10,000 cycles per second. It is driven by a diesel unit. Both are water cooled. A control unit regulates the output required to heat different sizes.

New easier way

. . . to use stainless steel lock wire!

Note how the lock wire, uncoiling from the inside, is dispensed as needed from a hole in the top of this compact 1-pound package. No wild uncoiling! Moreover, the wire is better protected, handles easier and faster, with less waste, and with greater safety!

Here is a new National-Standard packaging development that is a natural for most safety lock wire uses in equipment manufacture, assembly and servicing.

For production operation requiring larger capacities, National-Standard offers lock wire on practical 5 and 10-pound disposable spools that may be spindle-mounted.

Check with National-Standard on the spooling of your choice and on stainless steel lock wire in any diameter from 0.020 to 0.067 and to government specifications: QQ-W-423, AN-W-24, MIL-W-6713 or AMS-5685-C.

NATIONAL NS NATIONAL-STANDARD Company NILES MICHIGAN **STANDARD**

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires*
WORCESTER WIRE WORKS, Worcester, Mass.; *music spring, stainless and plated wires, high and low carbon specialties* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels*

Automatic Unit Checks and Charts Gear Accuracy

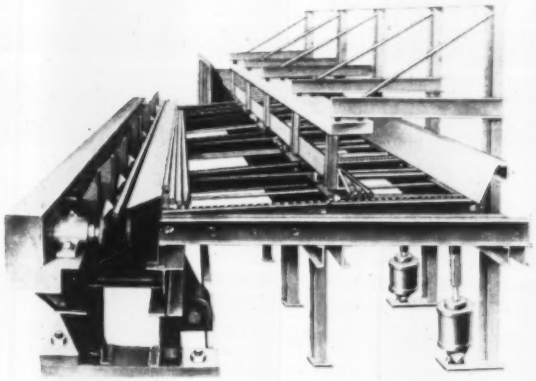
A Red Ring gear inspection-recording unit automatically checks gears for size and helix angle accuracy. It rejects out-of-tolerance parts, and makes a chart record of measurements. The unit shown inspects the helix angle of a transmission pinion.

The unit consists of three components: A gear gaging machine, a control panel, and a charting device.

Gears to be inspected are fed into gaging position where a one-revolution check is made. This is done by rotating the gear in tight mesh with a master gear.

Angular and radial displacements of the master gear are measured by electronic sensing heads that cause out-of-tolerance gears to be dropped out a chute. *Write*: National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. *Phone*: Walnut 1-8980

Automatic System Feeds Stock from Storage to Processing



The Big Four automatic bar or tube feeding system receives bundles of stock, transferring them any required distance to a bundle unscrambler. It unscrambles and transfers the bars preparatory to feeding, then feeds the stock singly as needed. Live roller conveyor sections and live V-rollers are utilized.

The receiving end can be placed in the stock storage area — inside or outside the plant. The discharge point conveys the stock lengthwise to processing units singly or in multiples, as required.

The system can be synchronized with any automatic take-away. It is adaptable to electronic control (tape, card, or other programming device). *Write*: Spurgeon Co., 23501 Hoover Rd., Warren, Mich. *Phone*: Jefferson 6-6250

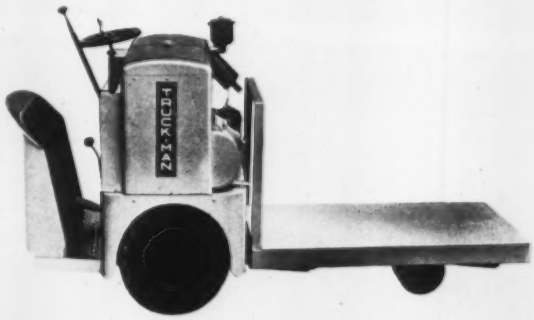
Platform Truck Has Constant Power Differential

The Model 75 platform lift truck has a 7500-lb capacity for skids or racks. It features power steering and a no-spin differential that delivers constant power to both drive wheels from a gasoline or LP-gas engine.

Either wheel will drive the truck if the other is on ice, grease, or in a depression. Drive tires are available for rough terrain, indoor, or outdoor use.

The standard platform is 28 in. wide and 60 in. long (wider ones are available and length may vary from 54 in.).

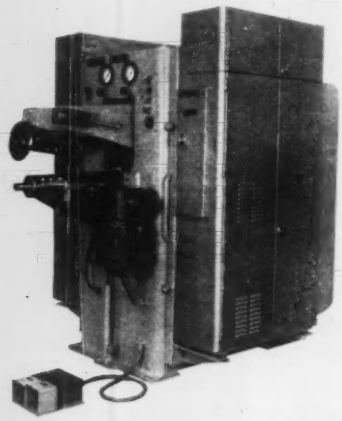
A two-speed forward and reverse transmission is controlled by a single lever with a twist throttle. Top speed is 10 mph. A deadman foot brake is included. *Write*: Truck-Man Lift Trucks, 612 Liberty St., Jackson, Mich. *Phone*: State 2-7181



NEW PRODUCTS and equipment

Titanium Seam Welded

A three phase, rocker arm type, seam welder handles stainless steels 0.012 through 0.051 in., and titanium and its alloys 0.016 through



0.051 in.—to Air Force, Navy, and Aeronautical specifications.

Drive speeds are steplessly adjusted by a direct current, Thymatrol type, motor drive system. Range of drive speeds is about ½ to 4 rpm. *Write*: Federal Machine & Welder Co., Warren, Ohio. *Phone*: 4-2521

Converter Powers Furnaces

A frequency converter, the Multiductor, is designed for powering induction furnaces. Low initial cost, high operating efficiency, and low maintenance requirements are cited as principal advantages.

The device contains no rotating

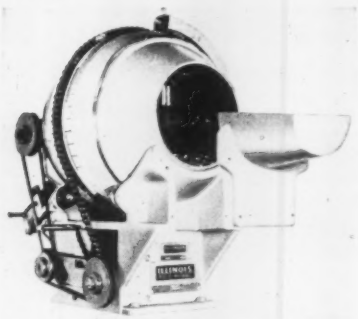
components, is enclosed in a cubicle. Output can be varied continuously and under load from zero to maximum, and no damage can result from overloads. *Write*: Ajax Electrothermic Corp., Trenton 5, N. J. *Phone*: Owen 5-6205

Hopper Speeds Feeding

This barrel-type hopper is for high volume feeding of screws and small parts to automatic machines. It assures maximum delivery, and is capable of feeding 300 to 1200 pieces a minute.

It handles screw sizes from #2 to 3/8 in. in lengths up to 3 in. The motor is ½ hp.

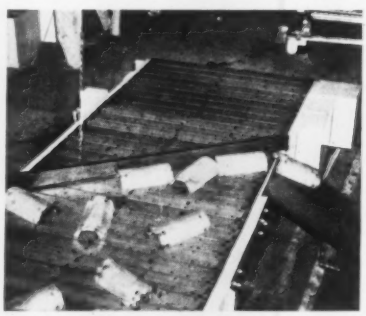
An oscillating-type hopper, ideal for packaging parts in small quantities, is also offered. *Write*: Power Tools Div., Illinois Tool Works,



2501 N. Keeler Ave., Chicago 39, Ill. *Phone*: Sherwood 1-7900

Conveys at Floor Level

A Flat-Top hinged steel belt conveyor for flush-with-floor (moving



sidewalk) or conventional above-the-floor mounting overlaps to provide a smooth surface.

Made from heavy gage steel with interchangeable components, the belt is designed for rugged service, moving heavy warehouse loads. Truck and personnel traffic can cross flush installations with the belt in motion.

The surface is sealed to prevent parts and tools from falling through and to provide maximum safety. *Write*: May-Fran Engineering Inc., 1725 Clarkstone Rd., Cleveland 12, Ohio. *Phone*: Kenmore 1-2304

Units Have Helical Gears

Optimount speed reducers feature a basic unit with single or double reduction helical gearing. The unit

can be mounted directly on the driven shaft or in a standard stock horizontal or vertical base.

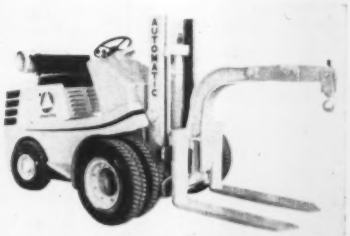
Basic units are of three types: Reductors for V-belt, sprocket, or gear drive to inputshaft; ratiomotors for direct drive to inputshaft; and flanged reductors sold without motors.

Four sizes provide output speeds of 10 to 431 rpm, and capacities of 1/6 to 15 hp. *Write*: Boston Gear Works, 14 Hayward St., Quincy 71, Mass. *Phone*: President 3-0400

Combines Fork and Boom

A standard fork lift truck can be operated as a crane by installing an extension boom and hook attachment.

The basic boom extends 30 in. and has a capacity of 4800 lb. Extensions are available to lengthen the boom to 42 or 60 in. *Write*: Automatic Transportation Co., di-



"WEIRKOTE'S ZINC COATING STAYS SKINTIGHT. NO PEELING OR FLAKING—CAN ELIMINATE DIPPING OR PLATING AFTER FABRICATION!"

Q. Sure, but what happens on the tough jobs—like deep drawing or crimping?

A. You can work Weirkote right to the limit of the steel itself. And as I said, no peeling or flaking.

Q. Then where's the miracle? We tried galvanized before. And it struck out. Too much trouble, too much cost fixing it up after fabrication.

A. No miracle. It's just that Weirkote's made by the continuous process which integrates zinc and steel so that the toughest fabrication won't break down the bond.

Q. That means then that Weirkote can eliminate the need for plating or dipping to assure uniform corrosion protection for the most intricate part . . . is that the picture?

A. Yes, that's exactly the picture . . . and besides, Weirkote is now treated to inhibit wet storage (white oxide) stain.

Send today for free booklet that details the time- and cost-saving advantages of using skintight zinc-coated Weirkote. Write Weirton Steel Company, Dept. B-8, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

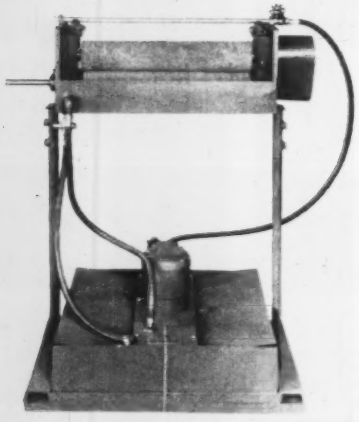
a division of

NATIONAL STEEL CORPORATION

vision of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

Unit Oils 72-in. Stock

The Model B (heavy duty) strip stock oiler with forced feed lubri-



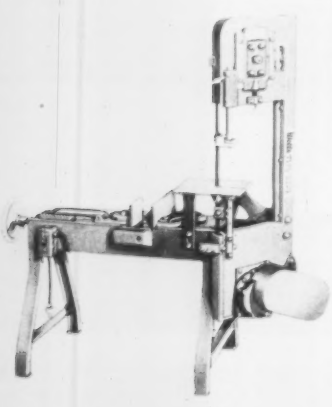
cates strip leading to a press at any height.

It handles material from 26 to 7 gage in widths from 24 to 72 in. Light, medium, or heavy oils may be used.

In operation, oil is pumped by a ½-hp motor from a reservoir to the wool-covered steel rolls. The rolls are geared for smooth, uniform lubrication of both sides of the stock. *Write*: Stamping Specialty Co. Inc., 2141 N. Sherman Dr., Indianapolis 18, Ind. *Phone*: Liberty 6-3002

Saw Is Convertible

The Model 58-B can be used for upright band sawing or for horizontal cutoff work. As a horizontal machine, it will handle rounds up to 6 in., rectangular shapes up to 6 x 10 in., and 5 x 5 in. at 45 degrees.



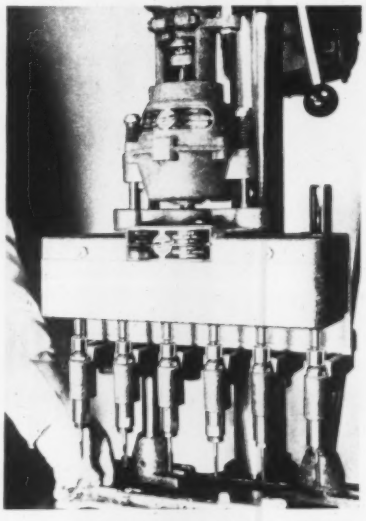
The unit converts to an upright saw by swinging the head to vertical position and installing the worktable. Selective speeds are 76, 141, and 268 fpm. *Write*: Well Mfg. Corp., 1515 Fillmore St., Three Rivers, Mich.

Head Has Six Spindles

A straight-line multiple drilling and tapping head, the Knuckle-Head 1000, has six fully adjustable ball joint type spindles.

The unit is capable of drilling or tapping a great variety of hole patterns without a reversing motor. It will operate in any position on any drill press, drill unit, or tapping machine.

Spindles can be located anywhere within a 3 in. diameter with a 15/16-in. minimum center distance

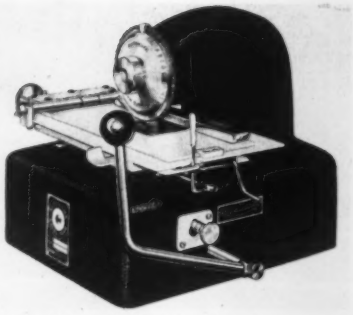


while the unit is running. *Write*: Ettco Tool & Machine Co. Inc., 594 Johnson Ave., Brooklyn 37, N. Y. *Phone*: Hyacinth 7-4400

Press Marks Stainless

This hand-operated detail press is for low production nameplate and small part stamping. It features automatic spacing and alignment of work. Each character can be located quickly by the simple turning of a wheel.

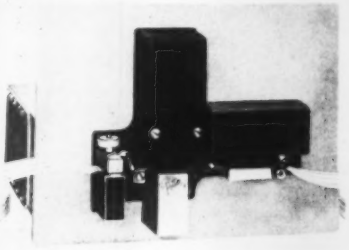
The operating lever will deliver up to 2 tons of pressure, sufficient to mark hard materials, such as stainless steel.



It is available in hand-operated and electric keyboard models. Write: Defiance Machine & Tool Co., 1920 S. Vandeventer Ave., St. Louis 10, Mo. *Phone*: Prospect 3-0567

Reads Tape Rapidly

The 909, a perforated tape reader which has been completely transis-



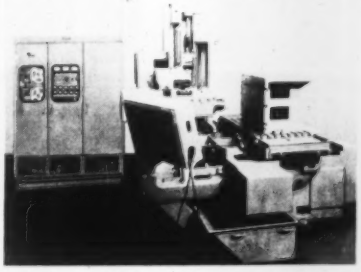
torized, provides an extremely accurate and economical means of processing information into digital computer systems.

The unit is suitable for rack or console mounting. It requires virtually no training for operation.

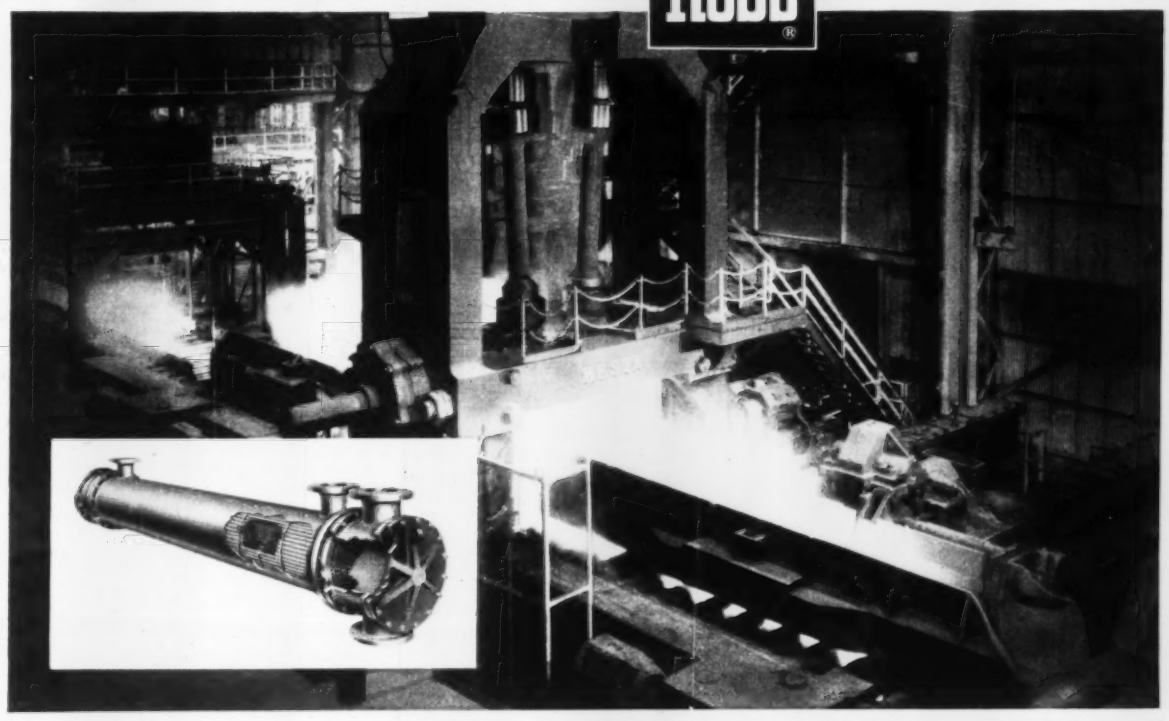
Features include: Character reading speeds up to 1000 a second, 3 millisecond starting time, and reading 5, 6, 7, or 8 level tape with sprocket channel. It is not affected by temperature changes. *Write*: Potter Instrument Co., Sunnyside Boulevard, Plainview, N. Y. *Phone*: Overlook 1-3200

Controls Intricate Work

The G-15-D numerical control system for machine tools provides a



OIL COOLING BY ROSS®



Blazing ingots thinned to glowing slabs
in this Mesta Mill

HEAVY SHOCK LOADS, scorching heat and continuous operation — they're all part of the job as this Mesta Universal Reversing Slabbing Mill rolls red hot steel ingots into slabs.

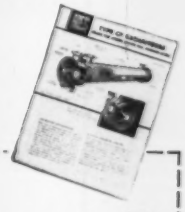
UNDER THESE SEVERE conditions where working temperatures of gears and bearings will often exceed 200°F., temperature-safe lubrication is a prime requirement. Even a lubrication failure at a minor point could shut down the entire mill.

THAT'S WHY Mesta selected two Ross Type CP Exchangers to provide dependable cooling of the circulating oil. Roll neck bearings, main drive gears and all hard working parts are given continuous protection by oil at the right temperature and right viscosity.

THROUGHOUT the metal industry, Ross Exchangers are counted on to safeguard the performance of engines, compressors, extrusion presses, metal drawing presses, welders, die casting machines, speed changers and other prime equipment. They're top-rated for thermal efficiency and ruggedness.

COMPACT IN DESIGN, easy to install and easy to maintain. Ross Exchangers are pre-engineered and fully standardized in a wide range of sizes to meet your heat transfer requirements.

For detailed information, send coupon below requesting Bulletin 2.1K5.



TO:

American-Standard SM8
Ross Heat Exchanger Division
Buffalo 5, N. Y.

Please send, without obligation, your Bulletin 2.1K5 describing Ross Type CP Exchangers.

NAME

TITLE

COMPANY

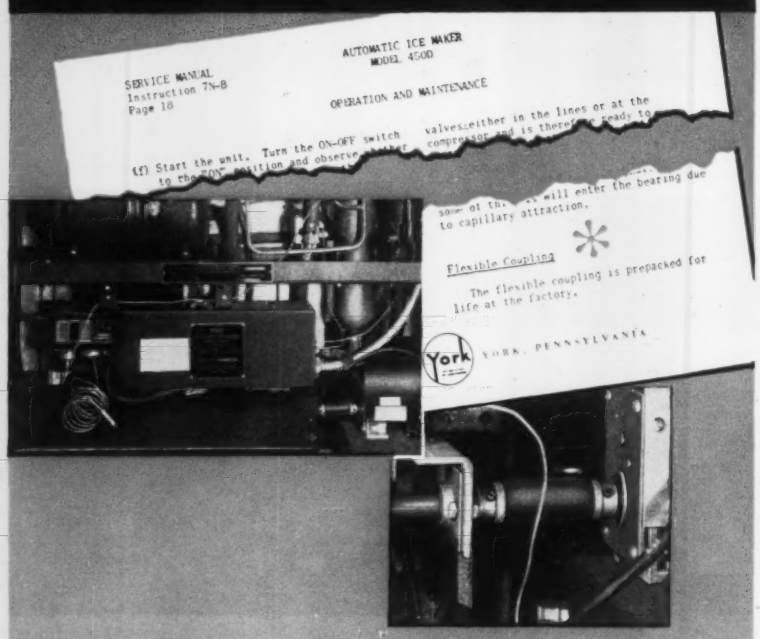
ADDRESS

CITY ZONE STATE

*American-Standard and Standard ® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
ROSS HEAT EXCHANGER DIVISION

"...flexible coupling (an APEX universal joint) is prepacked for life at the factory..."



Operation and maintenance instructions furnished with the York Model 450D Automatic Ice Maker are as crystal-clear as the 8,000 cubes the machine can provide every 24 hours. Included in the section on lubrication is a brief reference to the flexible coupling that joins the gear motor and the cam shaft: "The flexible coupling is prepacked for life at the factory . . ."

The flexible coupling is an Apex covered double universal joint, completely sealed to protect the joint and to provide clean, sustained lubrication.

Apex covered universal joints are used on a wide variety of industrial applications because they operate efficiently under wet or dry, corrosive or abrasive conditions. High overload capacity, lower deflection rate, superior fatigue resistance and high strength-weight ratio per size are other reasons why design engineers specify Apex universal joints to insure trouble-free service.

Catalog 28 will show you how Apex universal joints can help make yours a better product. Write, on your company letterhead please, for your copy.

1933 *A Quarter Century of Service to Industry* 1958

THE APEX MACHINE & TOOL CO.
1032 South Patterson Blvd.
DAYTON 2, OHIO

Phantom view of APEX covered universal joint which operates efficiently in wet or dry, corrosive or abrasive atmospheres, and in extremes of temperatures.

NEW PRODUCTS and equipment

precise, versatile method for automating machine tool cutting functions in three dimensions. Parts can be machined from design drawing reference information.

Production leadtime savings up to 75 per cent are possible since templates, cams, or models are not required and fixturing can be greatly simplified.

It speeds machining of intricate three dimensional parts containing pockets, flanges, tapers, contours, or grooves. *Write*: Bendix Industrial Controls Section, Bendix Aviation Corp., 21820 Wyoming Ave., Detroit 37, Mich. *Phone*: Lincoln 7-9800

Truck Propelled Manually

The low-cost Yardmaster 29 has pneumatic tires and telescopic lifting, and is easily pushed over rough surfaces. *Write*: Big Joe Mfg. Co., Wisconsin Dells, Wis.

Hones for Production

The Model AM triple purpose honing machine is ideal for production runs, toolroom, and salvage operations.

Its sealed, ball bearing spindle has infinitely variable speeds of 250 to 1400 rpm. A tachometer is provided for accurate setting.

The 14-gal capacity coolant tank is removable for cleaning. Standard V-belts are employed and automatic tensioning is provided. *Write*:

Tolerances .0002 with Cities Service Cutting Oil!

If you think the days of the precise craftsman are a thing of the past, you ought to take a tour through Arch Gear Works at North Quincy, Massachusetts.

There, you'd see some of the nation's foremost specialists in precision gearing going about their jobs with the most painstaking accuracy.

Such accuracy is absolutely vital at Arch Gear Works, because this unusual firm produces amazingly intricate mechanisms involving as many as 50 tiny precision gears... gears that automatically control the speed and torque of sensitive electro-mechanical devices.

In this highly complex, precise operation, Cities Service is the choice of cutting oils for a very simple reason: Cities Service Cutting Oils deliver .0002 tolerances and the finest possible finish. Few oils can match this performance.

With equally outstanding results, Arch Gear Works uses Cities Service Anti-Corrode to protect its gears during shipment, and Cities Service Pacemaker Oils for general lubrication and hydraulic machinery.

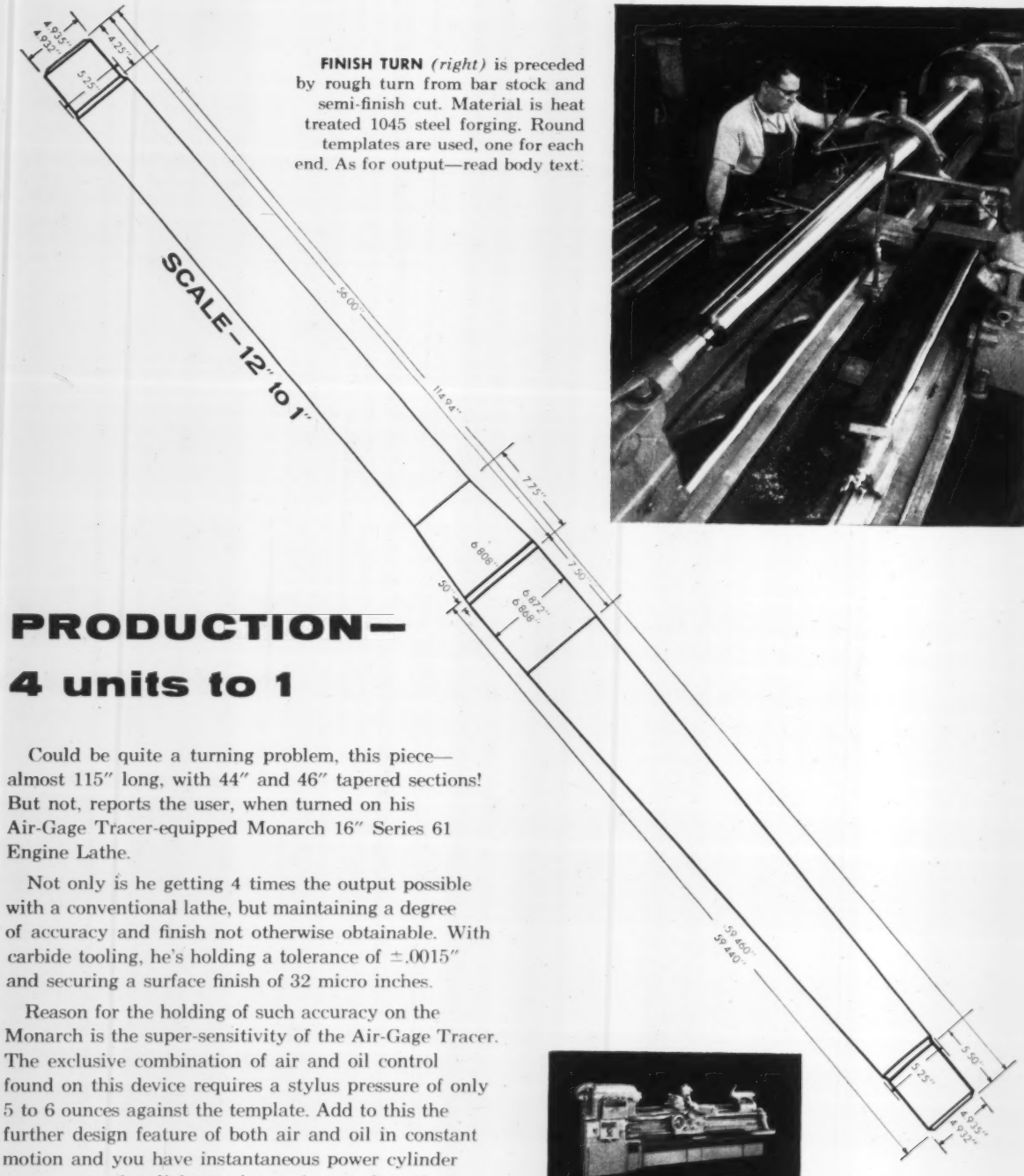
But you needn't operate a gear works to prove that Cities Service lubricants are geared to *your* operation. Simply talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N.Y.

Specialist Assembles Tiny Gear. Some mechanisms contain as many as 50 tiny precision gears—all produced with the aid of Cities Service Cutting Oils—and protected during shipment by Cities Service Anti-Corrode.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

FINISH TURN *(right)* is preceded by rough turn from bar stock and semi-finish cut. Material is heat treated 1045 steel forging. Round templates are used, one for each end. As for output—read body text.



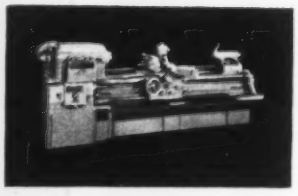
PRODUCTION— 4 units to 1

Could be quite a turning problem, this piece—almost 115″ long, with 44″ and 46″ tapered sections! But not, reports the user, when turned on his Air-Gage Tracer-equipped Monarch 16″ Series 61 Engine Lathe.

Not only is he getting 4 times the output possible with a conventional lathe, but maintaining a degree of accuracy and finish not otherwise obtainable. With carbide tooling, he's holding a tolerance of ±.0015″ and securing a surface finish of 32 micro inches.

Reason for the holding of such accuracy on the Monarch is the super-sensitivity of the Air-Gage Tracer. The exclusive combination of air and oil control found on this device requires a stylus pressure of only 5 to 6 ounces against the template. Add to this the further design feature of both air and oil in constant motion and you have instantaneous power cylinder response to the slightest change in template shape.

Now—about your turning requirements! We've got the machines and the tracer controls to better almost any conventional setup. Why not bet a three cent stamp against almost unlimited production improvement? Let us prove it . . . ***The Monarch Machine Tool Company, Sidney, Ohio.***



Monarch

ACCURACY • ECONOMY • LONG LIFE

TURNING MACHINES

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

NEW PRODUCTS and equipment

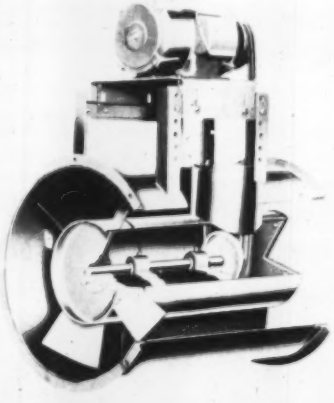
Superior Hone Corp., 1620 Elreno St., Elkhart, Ind. *Phone*: 4-0496

Fans Mount in Ducts

Series 300, motorized, axial flow fans mount directly in ducts and stacks to exhaust or supply air.

The Tubeaxial fans come in seven sizes for ducts and stacks from 18 to 42 in. inside diameter and handle from 2410 to 36,700 cfm.

They exhaust high temperature air or gases and are designed for easy application of corrosive resistant coatings or construction with special metals to handle corrosive or explosive atmospheres. *Write*: Dept. T-187, Sturtevant Div., Westinghouse Electric Corp., 200 Readville St., Hyde Park, Boston 36, Mass. *Phone*: Hyde Park 3-3700



YARD and FACTORY
TRAILERS

Fifth wheel steer. Pneumatic tires. Steel deck. Oak end and side racks.

CUSTOM-BUILT and quality-built for long-time, low-cost service. Flat steel wheels, solid rubber or pneumatic tires. Fifth-wheel or four-wheel knuckle steer. Steel or wood deck, or special superstructure. Any desired capacity.

Telephone or write to:

CUSTOM BUILT TRADE MARK

A-1051

EASTON

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

One Sure Way to CUT COSTS!

use a C-F SHEET LIFTER

The A. B. Dick Company, Niles, Illinois, found that this C-F Lifter has substantially reduced man hours and crane time required to move stock in and out of storage.

Up to 10,000 lbs. of high grade sheets in varying widths may be picked up, carried and unloaded at shears or machines with speed and economy by the Lifter and its operator.

C-F Lifters are made in standard or semi-special models to handle from 2 to 60 tons. Bulletin SL-60 describes the advantages you can obtain from C-F Lifters. Write for it today.

CULLEN-FRIESTEDT CO.

1308 South Kilbourn Avenue • Chicago 23, Illinois

NEW literature

Write directly to the company for a copy

Hydraulic Presses

Bulletin H-5000 details the important features of four-column hydraulic presses. In addition to standard press uses, these units have been successfully used for powdered metals, abrasive wheel compacting, sizing, curing, reducing, expanding, and setting. Press Dept., A. B. Farquhar Div., Oliver Corp., 128 N. Duke St., York, Pa.

Burring

A bulletin describes flexible burring utilizing Lea compounds and methods. Lea Mfg. Co., Waterbury 20, Conn.

Honing Machine

A 30-page catalog features the Model AM honing machine. Four machines, two honing heads adaptable to drill presses, and mandrels are also covered. Superior Hone Corp., 1620 Elreno St., Elkhart, Ind.

Government Specs

A catalog lists military, Army, and federal specifications, their definitions, and the corresponding 3M adhesive, coating, or sealer that meets them. Adhesives, Coatings & Sealers Div., Minnesota Mining & Mfg. Co., 423 Piquette Ave., Detroit 2, Mich.

Coil Stock Calculator

This calculator tells the most desirable coil weights to be specified in ordering for work ahead—considering coil handling equipment available and work to be done. It covers steel, brass, and aluminum coils. Publications Div., F. J. Littell Machine Co., 4101 N. Ravenswood Ave., Chicago 13, Ill.

Tiering Truck

A bulletin describes a four-directional electric tiering truck designed to transport long loads through a wide main aisle and then move sideways into a narrow aisle. Raymond Corp., 91-168 Madison St., Greene, N. Y.

Rolling Scaffold Towers

Bulletin No. 66 explains various applications of scaffold used as rolling towers and work staging for all types of interior and exterior maintenance and repairwork. Beaver-Advance Corp., Ellwood City, Pa.

Variable Speed Control

Bulletin No. F-1882 shows how precise speed of any selection may be set up and maintained automatically through the Varitrol pneumatic system and Varidrive variable speed units. Advertising Dept., U. S. Electrical Motors Inc., P. O. Box 2058 Terminal Annex, Los Angeles 54, Calif.

Transmissions

A catalog includes engineering data and complete specifications of four models of transmissions that range from 1 to 60 hp. Torque ratings and gear ratios are included. Western Mfg. Co., 3400 Scotten Ave., Detroit 10, Mich.

Bridge Cranes

Catalog DH-43B describes Type B-699 top running, double bridge, motor driven cranes. Wright Hoist Div., American Chain & Cable Co. Inc., York, Pa.

Motor-Generators

Rotating and control equipment for the manufacturing, marine, and aviation industries are described in a brochure, Form 4988. This firm's products now include the entire Star-Kimble line. Electrical Div., Safety Industries Inc., P. O. Box 904, New Haven, Conn.

Coil and Sheet Slitting

"Multiple Rotary Slitting Lines" offers basic information on time studies, analysis of operating cycles, methods of coil handling, scrap disposal, and data on slitters, uncoilers, recoilers, coil cars, and scrap choppers. Yoder Co., 5500 Walworth Ave., Cleveland 2, Ohio.

Titanium Machining

"Machining Recommendations for Titanium" discusses fundamentals, factors which affect machinability, and basic requirements. Included are suggested feeds, speeds, and tool angles on turning, milling, drilling, tapping, grinding, and reaming. Recommendations for abrasive, hack, and bandsawing operations are covered. Mallory-Sharon Metals Corp., Niles, Ohio.

Filters

A 132-page reference manual on engineering and application deals with filters for aircraft, missiles, industrial, and ground support equipment. Filters for lubricating oils, gasoline, jet fuels, hydraulic fluids, compressed air, gases, de-icing fluids, air-conditioning systems, test stands, and refueling installations are described. A section gives a brief history of filtration, a discussion of particle sizes, and basic filter media. Bendix Filter Div., Bendix Aviation Corp., 434 W. 12 Mile Rd., Madison Heights, Mich.

Welding

Bulletin SP-20 gives recommended welding schedules for spotwelding Inconel "X" in thicknesses of 0.032 to 0.188 in. It covers properties, welding with triphase machines, welding with single phase alternating current machines, postweld heat and forging pressure, x-ray examination, and spotweld macrographic examination. Taylor-Winfield Corp., Warren, Ohio.

Diamond Wheels

Catalog ESA-290 contains consumer net prices for manmade diamond wheels in resinoid and vitrified bonds, and natural diamond wheels in metal bond. Simonds Abrasive Co., Tacony and Fraley Streets, Philadelphia 37, Pa.

Hard-Facing Alloy

Data sheet No. 21 describes Colmonoy No. 75, a tungsten carbide Sprayweld powder. Content, properties, and typical applications for the hard-surfacing material are covered. Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich.

Ball Bearings

Bulletin 104 describes cartridge ball bearings with dual labyrinth seals that hold a life supply of lubricant and employ a slinger-action to circulate the lubricant. Hoover Ball & Bearing Co., Ann Arbor, Mich.

Pointing and Shaving

Five circulars describe some automatic and semiautomatic second operation machines. Economy Engineering Co., Willoughby, Ohio.

NEW BOOKS

Tooling for Metal Powder Parts, American Society of Tool Engineers, McGraw-Hill Book Co. Inc., 327 W. 41st St., New York 36, N. Y. 256 pages, $7.50

The latest practical developments in the production of metal powder parts are treated in this manual. Emphasis is placed on planning and tooling for structural parts, such as cams, gears, and latches. The entire process is outlined with information on its advantages and limitations, comparisons with other processes, and case histories illustrating the necessary planning and economics. Technically, the volume covers the essential factors involved in designing parts, methods of production and preparation of powders, briquetting techniques, design of briquetting tools, and finishing operations—including sizing, coining, machining, surface cleaning, heat treating, and plating.

1958 *Canadian Trade Index*, Canadian Manufacturers' Association, 67 Yonge St., Toronto 1, Ont. 1083 pages, $10.00

This volume is designed to provide buyers and sellers with an authoritative directory of all products manufactured in Canada, and the names of the firms making them. It includes a complete list of Canadian manufacturers having more than a local distribution for their products, irrespective of membership in the Canadian Manufacturers' Association. Their products are classified under some 10,000 headings.

Zone Melting, William G. Pfann, John Wiley & Sons Inc., 440 Fourth Ave., New York 16, N. Y. 236 pages, $7.50

This book includes all the information that a student, scientist, engineer, or manufacturer will need to plan a zone melting process or to decide whether one is feasible. It covers both theory and practice and shows potentialities of crystallization not yet exploited.

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When you pay for HIGH QUALITY high-carbon wire, you want to be sure you get it. You do, when it is supplied by Roebling.

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This lightweight "No Charge" spool is typical of Roebling's modern packaging methods that save customers time and money.

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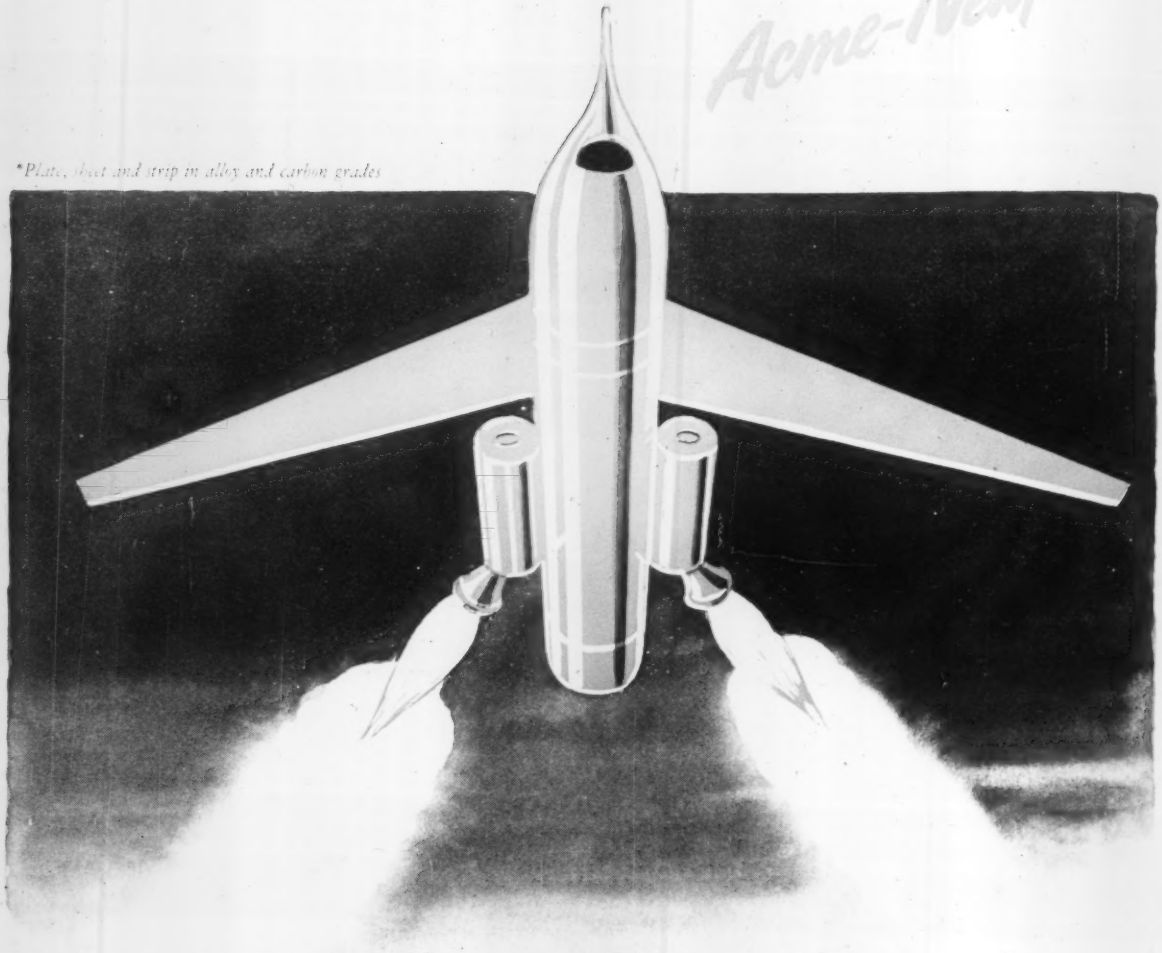
Acme-Newport

*Plate, sheet and strip in alloy and carbon grades



In selecting Acme-Newport steel for important airplane parts, missiles and Jatos, prime and subcontractors recognize the uniformly high quality of this mill's output. Principal grades thus utilized are aircraft quality plate, sheet and strip, including the vital chrome-molybdenum AISI 4130 type. They consistently respond properly to heat treatment, meet the uncompromising demands of national defense with the same dependability that has marked this basic steel producer's 72 years of service to industry. Discuss your needs with Acme-Newport and let them outline their facilities and service.

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Market Outlook

Automakers Buy Cautiously

STRIKE threats in the automotive industry are having an adverse effect on steel buying.

Automakers are in the market, but they're exercising great caution. They won't risk big orders until they get Walter Reuther's name on a contract. If the UAW calls a strike, cash will be worth more than steel, they reason.

Neither side wants a walkout, but chances for a settlement look less hopeful. After weeks of bargaining, Big Three and union negotiators are as far apart as when they started. They're so entrenched in the positions they've taken that compromise has become a naughty word.

STRIKE'S IMPACT— If the automakers were shut down during the fourth quarter, all bets would be off on a yearend rally for steel. Suspended operations wouldn't bother the carbuilders too much because they can turn out 5 million cars (their estimate of sales in 1959) in the nine months from January through September. If they delayed ordering steel until the strike ended, their suppliers would have to work close to capacity during the spring. What's more, fear of a possible steel strike during the summer would cause many a consumer to buy for inventory, redoubling demands on the industry.

INGOT RATE CLIMBS— Despite the slowness in automotive buying, the trend toward a stronger market is unmistakable. Steelmakers have boosted their output for six consecutive weeks. Last week, they pushed the operating rate 1.5 points higher to 60.5 per cent of capacity.

Production was about 1,634,000 net tons of steel for ingots and castings.

CONSTRUCTION HELPS— More than any other industry, construction accounts for the upturn in steelmaking. During the first half of 1958, it supplanted the automotive business as steel's best customer (see Page 131). (Steel service centers are the biggest buyers, but they're not ultimate consumers. Much of their steel goes to construction.)

Shipments to the major markets included: Steel service centers, 18.6 per cent of total domestic shipments; construction (including maintenance), 16.3; automotive, 15; containers, 12.2. Last year, service centers took 18.2 per cent of finished steel shipments; automotive, 17.8; construction, 15.7; containers, 7.8.

INVENTORIES LOW— Offsetting the relatively weak performance of Detroit's steel buyers, miscellaneous consumers have stepped up their purchases. Many are buying to replace depleted stocks. Demand for standard pipe, reinforcing bars, galvanized sheets, and tin plate remains strong.

STAINLESS PLATES REDUCED— To the surprise of stainless steel producers who were considering raising prices, U. S. Steel Corp. cut its quotations on stainless plates 6 per cent. As a gesture toward Sen. Estes Kefauver (D., Tenn.), the corporation translated its reduction of 5 cents a pound into a monumental revision: $100 a ton. (Plates accounted for only 5 per cent of the industry's stainless steel shipments last year.) U. S. Steel said the move was dictated by "competitive market conditions." It's reported that a small eastern mill was underselling Big Steel by rolling slabs purchased outside into low-cost plates.

TIN PLATE UNAFFECTED— Almost unscathed by the recession, tin plate producers are continuing near-capacity operations. They haven't raised their prices and probably won't before October. (They must give their customers 35 days' notice.) Says one producer: "We have to be cognizant of our competition. In the canning business, the cost of metal is a big part of the total cost."

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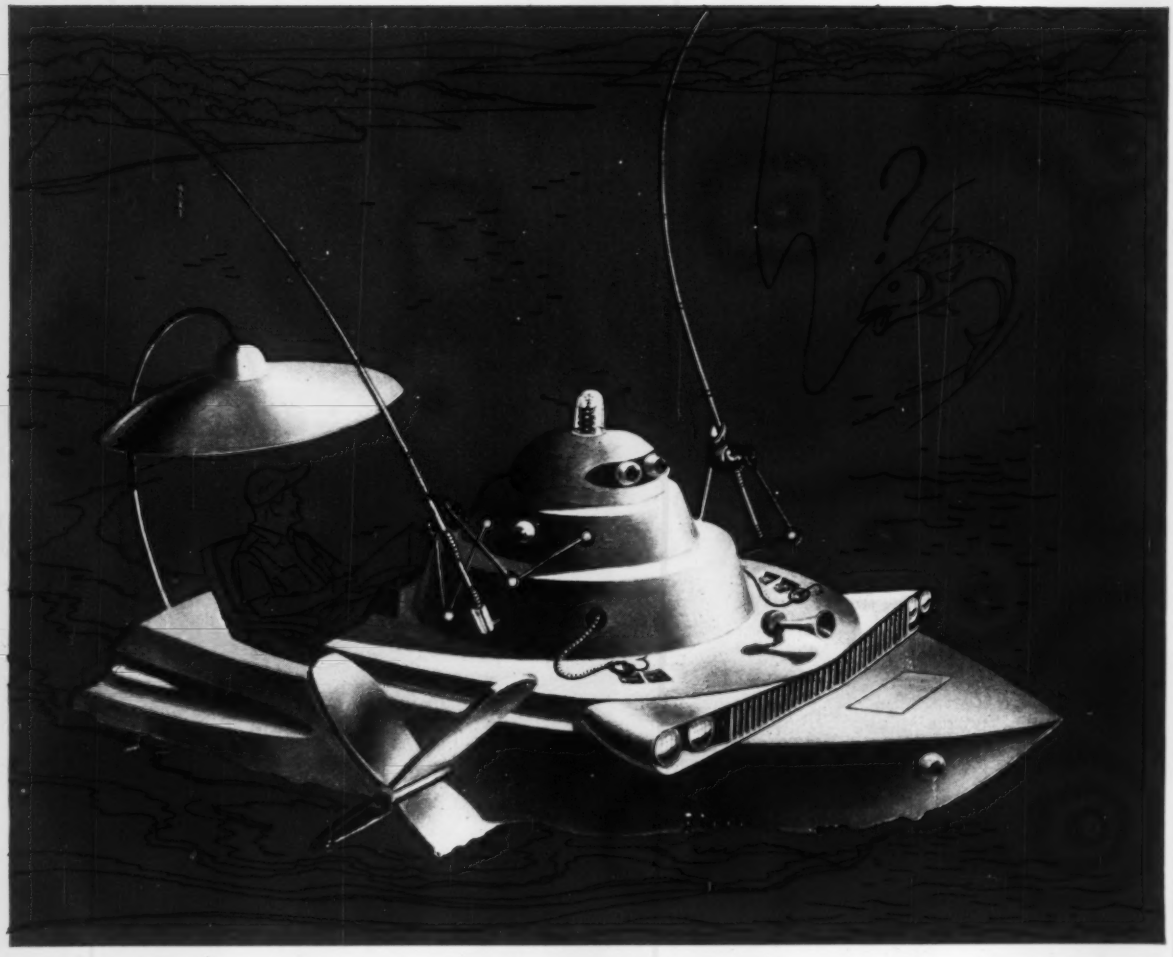

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"Swede" *pig iron*

STEEL PRODUCTS
Plates (sheared)
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Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

STEEL MILL SHIPMENTS—First Half 1958

MARKET GROUPS	Net Tons	Per Cent of Total
Warehouses	5,097,936	17.76
Construction	4,477,302	15.60
Automotive	4,099,258	14.28
Containers	3,351,714	11.68
Contractors' products	1,681,621	5.86
Machinery	1,529,050	5.33
Converters	1,394,346	4.86
Export	1,306,121	4.55
Electrical machinery	882,742	3.08
Rail transportation	865,649	3.02
Domestic, commercial equipment	835,384	2.91
Appliances, utensils, cutlery	693,404	2.42
Agricultural	583,022	2.03
Shipbuilding	440,107	1.53
Forgings	367,504	1.28
Fasteners	360,021	1.25
Unclassified	323,324	1.13
Oil & gas drilling	155,553	0.54
Ordnance & other military	128,001	0.45
Mining, quarrying, lumbering	97,138	0.34
Aircraft	30,021	0.10
Totals	28,699,218	100.00

PRODUCTS	Net Tons	Per Cent of Total
Cold-rolled sheets	4,427,048	15.43
Hot-rolled sheets	2,761,328	9.62
Plates	2,749,813	9.58
Electrolytic tin plate	2,599,582	9.06
Hot-rolled bars	2,585,659	9.01
Structural shapes	2,045,520	7.12
Line pipe	1,411,590	4.92
Galvanized sheets	1,266,441	4.41
Semifinished	1,179,998	4.11
Drawn wire	1,153,139	4.02
Standard pipe	1,083,406	3.78
Reinforcing bars	1,007,414	3.51
Oil country tubular goods	545,405	1.90
Cold-finished bars	472,460	1.65
Cold-rolled strip	451,259	1.57
Hot-rolled strip	446,417	1.55
Rails & accessories	338,359	1.18
Mechanical tubing	262,031	0.91
Electrical sheets & strip	222,991	0.78
Pressure tubing	128,257	0.45
Tool steel	34,243	0.12
All other	1,526,858	5.32
Totals	28,699,218	100.00

Construction Bolsters Steel Market

Mill shipments to all categories dropped this half, but there are a few bright spots, chiefly construction and agriculture. Autos and rails show greatest decline

LARGEST single consumer for mill shipments of steel in the first half of 1958 was the construction industry.

It replaces the automotive industry, top consumer in the corresponding period of 1957.

Warehouses and distributors have been the largest buying group—but they are not consumers. Their buying is for resale.

Bigger Percentage—A report by the American Iron & Steel Institute, New York, shows that the construction industry took 15.6 per cent of the mill shipments, compared with 14.74 per cent up to mid-1957.

Both the automotive and construction industries ordered less steel during the first half than during the same period of 1957, but construction's buying dropped 33 per cent while automotive's was down 44 per cent.

Steel going into rails and accessories showed the greatest decline by sinking 75 per cent under the first half of 1957. The rail transportation market skidded 65 per cent.

Tin Plate Moves Up—Tin plate production was also off, but held well enough to move into fourth position when hot-rolled bars and structural shapes dropped more.

The container industry, mirroring tin plate, also fell somewhat, but still increased its percentage of mill shipments from 8.42 during the first six months of 1957 to 11.68 per cent during the same period this year.

Farm Demand Holds—Use of steel by agricultural equipment firms dropped less than 2000 tons from the first half of 1957, upping their share of the market from 1.53

to 2.03 per cent. Galvanized sheet production reflected the farmer's prosperity and the high level of construction by moving from fourteenth in production to eighth in the first half of 1958. The percentage of production increased from 2.92 to 4.41.

Plate production, which rose from fourth position to second in the first half of 1957, has dropped to third.

Oil country tubular goods are also down, dropping from 3.58 per cent of total production during the first half of 1957, to 1.90 per cent as users continue to live off inventories.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 142 & 143

"We've noticed a little upturn," says a Pittsburgh mill specialist in cold-rolled strip. "There are no signs of marked improvement, but many of our customers are replenishing inventories. They won't buy heavy until they can see that automotive demand is tightening the supply. Appliance makers show little enthusiasm. They're ordering about a month ahead."

Higher strip prices are drawing more fire from big consumers than from small ones, another producer reports.

Automotive orders, particularly for cold-rolled sheets, are being received, and there are no indications of reluctance on the part of automakers. Mills point out that quick cancellations will result in the event of an auto strike.

Deliveries on major grades are still easy. Galvanized sheets are tighter with one mill quoting around five to six weeks. Generally, hot-rolled sheets and strip are two to three weeks for 40 in. wide and narrower and early September for wider. Enameling iron sheets and electrical sheets are quoted for middle to late September. Tin mill products are at a fairly high, steady level.

Inland Steel Co. will idle its 76-in. continuous strip mill for eight or nine days while equipment realignments and improvements are made. An inventory has been built up and finishing operations normally dependent on this mill will not be affected.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 141

Demand for construction steel is strong in the Midcontinent (St. Louis) Area. That for reinforcing bars has been going up since spring, and is greater now than at any time this year. Shipments extend three to four weeks. Wire mesh is in pretty much the same situation —demand strong and no sign of a letup.

Steel Bars . . .

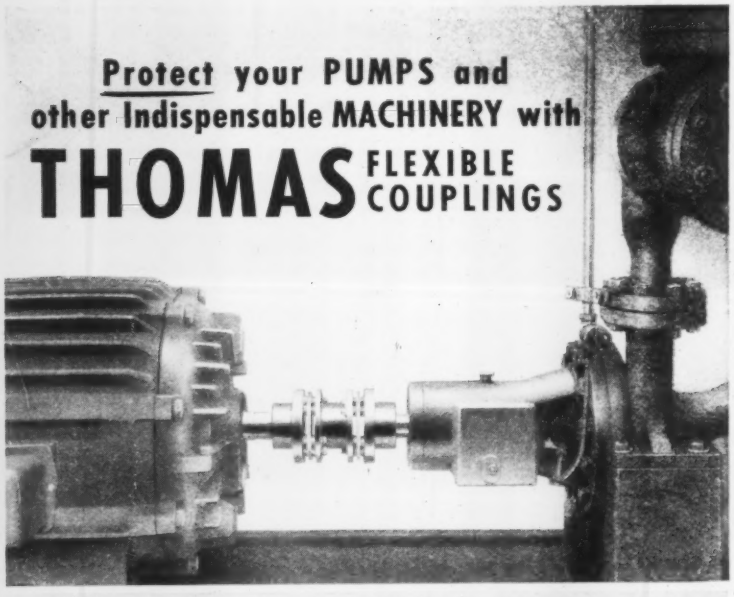
Bar Prices, Page 141

If there is any change in steel bar buying, it is slightly on the up side, reflecting in part improvement in automotive requirements. Since the first of the month, business has been on a fairly even keel with vacations and warm weather tending to restrict trading.

"Our sales to the automotive and farm implement trades are starting to show a little more life," says a sales official at a small rerolling mill in the Pittsburgh district. "But

Protect your PUMPS and other Indispensable MACHINERY with

THOMAS FLEXIBLE COUPLINGS



NO LUBRICATION NO MAINTENANCE NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Flexible Couplings should last a lifetime.

UNDER LOAD and MISALIGNMENT ONLY THOMAS FLEXIBLE COUPLINGS OFFER ALL THESE ADVANTAGES:

- Freedom from Backlash
- Torsional Rigidity
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- Original Balance for Life
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- No Wearing Parts
- No Maintenance

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

orders are still being released piecemeal, indicating that buyers are none too confident. Fortunately for us, the high volume of construction activity has kept us running close to capacity on reinforcing bars, one of our major products."

Rerollers say their customers are accepting higher prices with a minimum of grumbling. "They realize that we have to pay more for labor and semifinished steel," a sales manager explains.

LaSalle Steel Co., Chicago, will hold the price line on its Fatigueproof specialty steel bars. Although the cost of raw materials has increased substantially, improved production methods and quality controls have enabled the firm to absorb this increase and pass along the savings to its customers, says A. Frank Golick, vice president-sales.

Tin Plate . . .

Tin Plate Prices, Page 143

"Our tin plate shipments were about as good in July as they were in June," a Pittsburgh district producer reports. "So far as we can see, August shipments will continue at the same level. We're not doing quite as well as we did last year, but we can't complain. Our performance has been far superior to that of steel products generally.

"We've made no decision on raising our prices yet, but buyers don't seem to be hedging. They can count on 35 days' notice. If and when we go up, most of the year's canning will probably be finished."

Plates . . .

Plate Prices, Page 141

"July wasn't quite as strong as we hoped it would be," a Pittsburgh producer reports. "August will be much better, mainly because of construction demand. We're getting little help from the freight car industry, and there's little hope for improvement soon."

Deliveries of sheared and strip plates can be had in two to three weeks. Universal plates can be obtained within ten days.

An 85,000-ton order for 36-in. electricweld pipe received by U. S. Steel's National Tube Div. has given the corporation's plate mills some work. Production of the 160-in. mill at Homestead, Pa., has been substantially increased.

In St. Louis, light gage plates are showing improvement over July demand, but not appreciably better than June's. Orders largely are for construction of barges and oil field tanks. In the Southwest, plate production is at near capacity and is setting the pace for the area's steelmaking operations. Imported steel (at $20 to $30 under domestic prices) is undercutting the market.

Structural Shapes . . .

Structural Shape Prices, Page 141

Bridge and highway work still dominate the structural market in the East. Queries on school and commercial jobs are increasing, especially in New England.

Competition is forcing structural fabricators in the Boston area to absorb the $4.50 a ton price increase for plain material. Fabricating shops are buying only to cover newly booked contracts. De-

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MODEL SRH

MODEL SR

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Available in both duplex and single models with ampere range from 200 to 1200. Complete complement of control equipment gives the Gold Star SR unlimited flexibility, plus milestone performance and unmatched dependability.

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Why MICROHONING AT EVINRUDE

trims costs . . . booms productivity . . . eliminates operations . . . improves quality

Evinrude Motors, Division of Outboard Marine Corporation, has replaced with Microhoning their former method of processing conn bores. Here's why:

MICROHONING INCREASES PRODUCTIVE CAPACITY 23 TIMES

Before Microhoning equipment was installed, Evinrude used diamond boring on wristpin and crankpin bores. Now! A per-man productivity comparison of the two processes shows: diamond boring, 300 rods in 40 hours; *Microhoning, 7,000 rods in 40 hours.*

Shown to the left is one of two lines of Microhoners. Each machine has: Microdial automatic stone-feed and stone-wear compensation; automatic stone-wear indicator; and Microsize Gage Ring automatic sizing control.

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2. Straightening of rods after boring.
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From a Microhoning run of 62,000, receiving 100% inspection on an air gage, only 200 rods required reprocessing. *This is a rejection rate of only 3/10 of 1%.*

IMPROVES PRODUCT QUALITY

Microhoning is a low-velocity abrading process that leaves bore surfaces free of torn, smeared or burned metal. Benefit: *Rods that have precise, longer wearing bores.*

To learn more of why Microhoning provides efficient stock removal, closer tolerances and functional surfaces, write to:

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8100 SCHOOLCRAFT AVENUE • DETROIT 38, MICHIGAN

liveries are running three to four weeks, depending on mill rolling schedules.

Stainless Steel . . .

Stainless Steel Prices, Page 145

Stainless steel suppliers report a small pickup in orders and slightly heavier shipments to the appliance and nonautomotive industries. Bulk of the new business is for September delivery. Automakers have made no subtantial purchases of stainless alloys, but they are expected to place orders next month for October delivery. Rolling schedules will be increased next month in anticipation of that business.

U. S. Steel cut the price of stainless steel plates 6 per cent. The firm said its action reflects current competitive market conditions. Mill base prices were dropped $100 a ton. Extra charges for gage, width, length, and treatment were adjusted both upward and downward. The discount and direct shipping allowance for jobbers were eliminated.

Tubular Goods . . .

Tubular Goods Prices, Page 145

Mechanical tubing is still being bought hand to mouth, a Pittsburgh district mill reports. Automotive buying remains slow, but a slight pickup has been noted in government spending for road building and defense. Pressure tube sales are adversely affected by declining industrial power consumption. Utilities are stretching out their expansion program. Tubemakers expect better sales in September.

Lombard Corp. has designed a semiautomated upset line which has been installed in Youngstown Sheet & Tube Co.'s seamless pipe mills at the Campbell Works. It processes casing and drill pipe 27 to 45 ft long with outside diameters of 3½ through 9⅝ in.

The Claymont, Del., plant of Colorado Fuel & Iron Corp. has booked 50,000 tons of 24-in. pipe. It will be delivered to the Argentine government which has a $50-million oil development program underway.

Demand for pipe used in construction is better this quarter than last quarter. The improvement is seasonal, but is also influenced by expected changes in labor cost. Some hedge buying prior to the re-

cent price increase was reported. A small but noticeable percentage of recent bookings was tonnage for inventory replenishment, including electrical conduit.

Wire . . .

Wire Prices, Pages 143 & 144

Alan Wood Steel Co., Conshohocken, Pa., has sold its cut steel nailmaking facilities to Wheeling Steel Co., Wheeling, W. Va. Harleston R. Wood, president of Alan Wood, says that nail production has been "insignificant" in comparison with his company's over-all operation. The Conshohocken mill will accept orders until Oct. 5 and will discontinue shipments on Oct. 24.

Tool Steel . . .

Tool Steel Prices, Page 145

Other makers are following the lead of Crucible Steel Co. of America, Pittsburgh, in raising tool steel prices. Carpenter Steel Co., Reading, Pa., announced the following changes, effective Aug. 7: High speed steels and tool bits, up 4.5 cents a pound; all high alloy and carbon tool steels (base 40 cents a pound and over) up 3 cents a pound; high alloy and carbon tool steels (base under 40 cents a pound) up 2.5 cents a pound.

Distributors . . .

Prices, Page 146

Several steel service centers are increasing base prices. They are also revising the quantity discount on hot-rolled products. The base price advance covers virtually all products except hot and cold rolled sheets and galvanized sheets.

While specific warehouse product increases amount to 25 to 39 cents per 100 lb, the average increase is only about 20 cents because an increased quantity discount on 5000 lb and over has the effect of more than offsetting the base price rise.

In reaction to higher mill prices, some distributors have raised prices on warehouse items. Lower priced imports are keeping the market competitive in many districts. Some distributors feel the new domestic prices will not be accepted unless a shortage develops.

Distributors report July business several points below that of June due to shutdowns for inventory tak-

How MICROHONING AT EVINRUDE trims costs . . . booms productivity . . . eliminates operations . . . improves quality

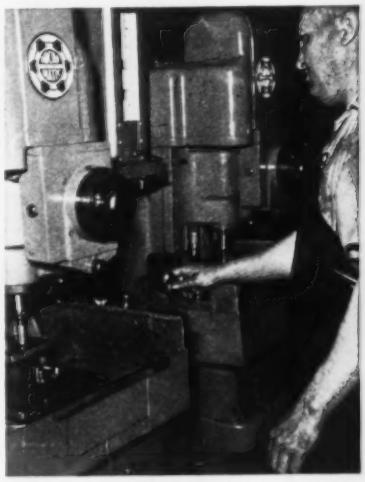
By installing Microhoning equipment to process wristpin and crankpin bores in conn rods, Evinrude Motors, Division of Outboard Marine Corporation, realized considerable savings. The following comparison with previously used diamond boring shows how Microhoning cut time, materials and costs:

MICROHONING BOOSTS PRODUCTIVE CAPACITY 23 TIMES

Diamond Boring Production Per Man: 300 rods in 40 hours.

Microhoning Production Per Man: 7,000 rods in 40 hours.

Several rod sizes are Microhoned on the same equipment — bore diameters range from .874" to 1.500", bore lengths from .815" to 1.011". Microhoning removes .005" stock from wristpin bores in about 24 seconds (floor-to-floor) and generates a controlled finish of 25 to 30 microinches as specified. On crankpin bores, Microhoning removes .0005" stock to generate specified finish of 3-5 microinches in 17 seconds (F-T-F). Tolerances on both bores are held to .0001" for roundness and straightness, and .0004" on diameter.



Close-up of double unit Microhoner shows operator checking a wristpin bore on air gage. Microdial, which automatically compensates for abrasive wear, is shown in center of photo.

ELIMINATES THREE OPERATIONS

1. Former re-milling of locating face on wristpin bore is eliminated — *Microhoning's float principle maintains original bore location.*

2. Straightening after rough boring is no longer required — *Microhoning tool follows neutral axis of bore.*

3. Milling oil hole grooves in wristpin bores is eliminated — *Microhoning generates a cross-hatch pattern that provides built-in oil reservoirs.*

SAVES COST OF MILLIONS OF BRONZE INSERTS PER YEAR

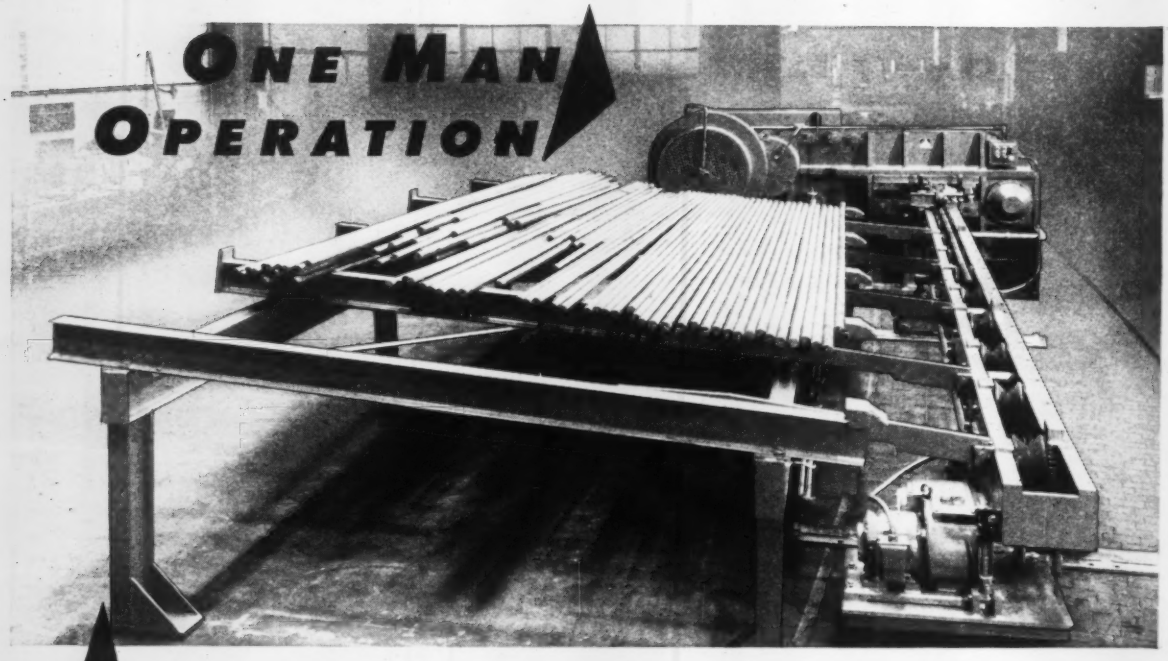
Microhoning's low-velocity abrading, with efficient cutting over a wide area, produces surfaces free of torn, smeared or burned metal.

Result: Precise bores having surfaces that resist galling and flaking.

Benefit: User obtains longer wearing rod bores and a functional supplanting of bronze inserts.

For further information on Microhoning process or to receive movie "Progress in Precision", write to:

MICROMATIC HONE CORP.
8100 SCHOOLCRAFT AVENUE • DETROIT 38, MICHIGAN

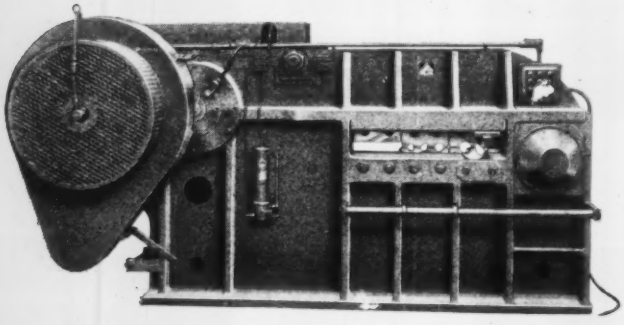


Production cutting of bar stock on a **HILL ACME** *Bar-Billet Shear with auxiliary automatic feed*

The nearest thing to automation achieved so far in the production cutting of bar stock is the HILL ACME BAR-BILLET shear with auxiliary automatic feed. With one man as standby observer, bars are fed automatically from the rack to the roll feed mechanism. Automatic stops on the billet shear predetermine the length of cut.

On ideal installations bars travel from steel storage on conveyors through the billet shear to tote boxes without being touched by hand.

HILL ACME BAR-BILLET shears have proven to be the most efficient, economical and trouble-free units on the market today. With the exclusive outboard support on the drop-off side, square, accurate cuts are assured. These high production shears are built in a variety of sizes to meet every cutting need up to 9″ in rounds. A new bulletin covering all details of construction and operation is now available.



The
HILL ACME
Company

MANUFACTURERS OF:
"CANTON" ROTARY SCRAP SHEARS • ALLIGATOR SHEARS • BILLET SHEARS • "HILL" GRINDING AND POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • "ACME" FORGING • THREADING • TAPPING MACHINES • "CLEVELAND" KNIVES & SHEAR BLADES

1201 West 65th St., Cleveland 2, Ohio

ing and vacations, but expect a pick-up in September.

Pig Iron . . .

Pig Iron Prices, Page 146

Demand for foundry iron is showing improvement from summer low spots but it is still below par. Most foundries resuming operations after summer shutdowns are continuing three or four day workweeks. August shipments may hit 10 per cent higher than July's. September shipments should be spurred by action from automotive foundries.

Last week in the Chicago district, two more blast furnaces were relighted. Of the district's 43 furnaces, 25 are operating. Youngstown Sheet & Tube Co. relighted its No. 2 furnace at Indiana Harbor, Ind. U. S. Steel reactivated its No. 10 stack at Gary, Ind.

The new, 1000 ton per day furnace at U. S. Pipe & Foundry Co.'s North Birmingham, Ala., plant was scheduled to be fired last week. About 100 men are to be added to the company's payroll. The company's expansion plans call for construction of another furnace, but plans have been postponed pending a view at 1959 business.

United States Steel Corp. relighted its No. 3 furnace at Carrie Furnaces Div., Homestead, Pa. Almost completely rebuilt, the furnace now has a 28-ft diameter hearth and a rated capacity for producing 499,100 tons of iron a year, a gain of nearly 70,000 over former capacity.

The furnace was shut down for the rebuilding project on May 4, 1957, after having produced 3,298,339 tons of iron during an eight-year campaign.

600
AIR-CONDITIONED
Guest Rooms
NOW you can be sure of an air-conditioned room when you come to Baltimore! Teletype: BA 263.
the Lord Baltimore HOTEL

Iron Ore . . .

Iron Ore Prices, Page 147

Bethlehem Steel Co. has withdrawn four ore boats from its 11-ship fleet. Lack of business is blamed. Although Bethlehem's steel production has been rising, stockpiles of iron ore, coal, and limestone already are large. The company feels seven ships can easily handle all traffic.

Ferroalloys . . .

Ferroalloy Prices, Page 148

Pittsburgh Metallurgical Co., Niagara Falls, N. Y., has resumed operations at its plant on a 75 per cent of capacity basis. Production has been curtailed since last October when the company began banking its eight furnaces. Three of the larger furnaces have been restored to production. The five smaller units may resume before the summer ends, says Charles F. Colbert Jr., president.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2150 tons, estimated, grade separation structures, Northwest Expressway, Chicago, to Allied Structural Steel Co., Chicago.

2100 tons, office and research building, Scott Paper Co., near Philadelphia International Airport, to Bethlehem Steel Co., Bethlehem, Pa.

1185 tons, Darling Towers Apartment, Wilmington, Del., to Lehigh Structural Steel Co., Allentown, Pa.

650 tons, Public School 298, Brooklyn, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

650 tons, Public School No. 299, Brooklyn, N. Y., to unnamed fabricator.

280 tons, warehouse, Sears Roebuck & Co., Philadelphia, to Easton Steel Structures, Easton, Pa.

222 tons, state underpass, 26th Street and Vare Avenue, Philadelphia, through Kaufman Construction Co., general contractor, that city, to Bethlehem Fabricators Inc., Bethlehem, Pa.

190 tons, municipal seafood distributing center, Philadelphia, to Easton Steel Structures, Easton, Pa.

155 tons, two state bridges, Plymouth-Kingston, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Central Construction Co., Lawrence, Mass., general contractor; 90 tons, concrete reinforcing bars, to Bethlehem Steel Co., Bethlehem, Pa.

145 tons, state highway bridge, Susquehanna County, to High Walding Co., Lancaster, Pa.

135 tons, bridge for the U. S. Army Engineers, over Lackawanna River, Prompton, Pa., to the Pine Brook Iron Works, Scranton, Pa.

127 tons, addition to College of Puget Sound, Tacoma, Wash., to United Concrete Pipe Corp., Auburn, Wash.

STRUCTURAL STEEL PENDING

7011 tons, state bridge work, Philadelphia County, Pa.; bids Aug. 29.

5200 tons, State Cross Expressway, Bronx, New York, including 3800 tons of tunnelwork under Grand Concourse; Johnson, Drake & Piper, that city, low on general contract.

4700 tons, Ft. Duquesne state bridge, Pittsburgh; American Bridge Div., United States Steel Corp., that city, low bidder; due to typographical error this was reported last week as involving 1700 tons.

2650 tons, seven state bridges and highway

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

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ALL MESHES
HIGH PURITY 99.2%
COMMERCIAL 98.6%

section, Naugatuck, Conn.; also 1540 tons, concrete reinforcing bars and 295 tons, highway mesh.

1861 tons, state bridge work, Erie County, Pa.; bids Aug. 29

1700 tons, Ft. Duquesne state bridge, Pittsburgh; American Bridge Div., U. S. Steel Corp., Pittsburgh, low bidder.

1675 tons, six grade separations, three bridges, Hockanum River and concrete box culvert, East Hartford (Conn.) Expressway; White Oak Excavators Inc., Plainville, Conn., low, general contract; also 1285 tons, concrete reinforcing bars, and 1255 tons, steel piles.

REINFORCING BARS . . .

REINFORCING BARS PLACED

650 tons, North Seattle High School, to Northwest Steel Rolling Mills Inc., Seattle; Sound Construction & Engineering Co., Seattle, general contractor.

250 tons, reinforced concrete arch bridge, Russell, Mass., to Scherer Steel Co., East Hartford, Conn.; Daniel O'Connell's Sons Inc., Holyoke, Mass., general contractor.

219 tons, housing project, Ladd Air Base, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Manson-Osberg Co., Seattle, general contractor.

110 tons, dormitory, Florida State University, Tallahassee, to Laclede Steel Co., St. Louis; Allen M. Campbell Co., Tyler, Tex., general contractor.

100 tons, two Washington State, King County, highway spans to Northwest Steel Rolling Mills Inc., Seattle; Dale M. Madden Co., Seattle, low $88,823, general contractor.

Unstated tonnage, ten state bridges, Berks County, Pa., to be built of prestressed concrete by Schuylkill Products Co., Cressona, Pa.; work had also been figured on a structural steel basis (tonnage estimated at 1200).

PLATES . . .

PLATES PLACED

1275 tons, hull plates, General Stores Supply Office, Navy, Philadelphia, to Phoenix Iron & Steel Co., Harrisburg, Pa.

210 tons, hull plates, General Stores Supply Office, Navy, Philadelphia, to Lukens Steel Co., Coatesville, Pa.

PIPE . . .

STEEL PIPE PLACED

50,000 tons, transmission pipe, a $50-million development program for the Argentine government, to the Claymont Plant of Colorado Fuel & Iron Corp., Claymont, Del.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National, 144 diesel locomotives, with thirty-two, 1800 hp passenger units; four, 1400 hp road switchers; and twenty-three, 1000 hp yard switchers going to Montreal Locomotive Works Ltd., Montreal, Que., and 85 road switchers, 1200 to 1750 hp, going to General Motors Diesel Ltd., London, Ont.

RAILROAD CARS PLACED

Chicago, Milwaukee, St. Paul & Pacific, 1000 fifty-ton boxcars, 500 to Pullman-Standard Car Mfg. Co., Chicago, and 500 to the General American Transportation Corp., Chicago.

Canadian National, 60 air dump cars, to the National Steel Car Co., Hamilton, Ontario, Canada.

July Steel Output Dips

Production of ingots and steel for castings declined to 6,370,000 tons in July, vs. 7,127,480 tons in the preceding month and 8,908,732 tons in July of last year. Total for the first seven months was 44,122,427 tons, compared with 69,492,279 tons for the like period a year ago.

According to the American Iron & Steel Institute, the July index stood at 89.5 (average production during the 1947-49 period equals 100). It compares with 103.5 in June and 125.2 in July, 1957.

July operations were at 53.3 per cent of capacity, compared with 61.6 per cent in June and 54.1 per cent for the first half.

Steel Ingot Production—July, 1958

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	BESSEMER Net tons	BESSEMER Per cent of capacity	ELECTRIC Net tons	ELECTRIC Per cent of capacity	TOTAL Net tons	TOTAL Per cent of capacity
1958								
January ..	6,085,124	58.6	121,338	35.5	547,440	44.8	6,753,902	56.5
February .	5,252,112	56.0	81,597	26.4	448,614	40.6	5,782,323	53.6
March	5,598,944	53.9	122,317	35.8	533,361	43.6	6,254,622	52.3
1st Qtr. ..	16,936,180	56.2	325,252	32.8	1,529,425	43.1	18,790,857	54.1
April	4,875,619	48.5	109,433	33.1	547,939	46.3	5,532,991	47.8
May	5,602,123	53.9	110,366	32.3	588,670	48.2	6,301,159	52.7
*June	6,378,942	63.4	88,125	26.2	660,413	55.8	7,127,480	61.6
*2nd Qtr. .	16,856,684	55.3	307,924	30.7	1,797,022	50.1	18,961,630	54.0
*1st 6 Mo.	33,792,864	55.7	633,176	31.7	3,326,447	46.6	37,752,487	54.1
†July	5,678,000	54.7	114,000	33.3	578,000	47.3	6,370,000	53.3
†2nd Qtr. .	16,859,742	55.3	307,799	30.7	1,798,609	50.1	18,966,150	54.1
†1st 6 Mo..	33,795,922	55.7	633,051	31.7	3,328,034	46.6	37,757,007	54.1
1957								
January ..	9,829,691	99.0	294,839	77.1	884,232	86.5	11,008,762	97.1
February .	8,898,671	99.2	227,682	80.4	810,853	87.8	9,987,206	97.6
March	9,442,164	95.1	275,156	71.9	871,754	85.2	10,589,074	93.4
1st Qtr. ..	28,170,526	97.7	847,677	76.3	2,566,839	86.4	31,585,042	96.0
April	8,820,328	91.8	231,731	62.6	762,721	77.1	9,814,780	89.5
May	8,842,707	89.1	201,864	52.8	747,752	73.1	9,792,323	86.4
June	8,498,903	88.4	210,915	57.0	681,584	68.9	9,391,402	85.6
2nd Qtr. ..	26,161,938	89.8	644,510	57.4	2,192,057	73.0	28,998,505	87.2
1st 6 Mo..	54,332,464	93.7	1,492,187	66.8	4,758,896	79.7	60,583,547	91.5
July	8,086,519	81.4	194,638	50.9	627,575	61.4	8,908,732	78.6
August ...	8,297,172	83.6	204,723	53.5	731,995	71.6	9,233,890	81.5
September..	8,135,139	84.7	185,967	50.2	656,800	66.4	8,977,906	81.8
3rd Qtr. ..	24,518,830	83.2	585,328	51.5	2,016,370	66.4	27,120,528	80.6
9 Mo.	78,851,294	90.2	2,077,515	61.7	6,775,266	75.2	87,704,075	87.9
October ...	8,348,522	84.1	154,577	40.4	694,618	67.9	9,197,717	81.1
November .	7,674,698	79.9	134,709	36.4	583,512	59.0	8,392,919	76.5
December .	6,783,262	68.3	108,237	28.3	528,686	51.7	7,420,285	65.5
4th Qtr. ..	22,806,482	77.4	397,523	35.0	1,806,816	59.5	25,010,921	74.4
2nd 6 Mo..	47,325,312	80.3	982,951	43.3	3,823,186	63.0	52,131,449	77.5
Total	101,657,776	87.0	2,475,138	54.9	8,582,082	71.3	112,714,996	84.5

Note—The percentages of capacity operated are based on annual capacities as of Jan. 1, 1958, as follows: Open hearth 122,321,830 net tons; bessemer 4,027,000 net tons; oxygen process, electric and crucible 14,398,740 net tons. Total for 1958, 140,742,570 net tons. For 1957, the capacity tonnages are: Open hearth 116,912,410 net tons; bessemer 4,505,000 net tons; oxygen process, electric and crucible 12,041,740 net tons. Total for 1957, 133,459,150 net tons.
*Revised. †Preliminary.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

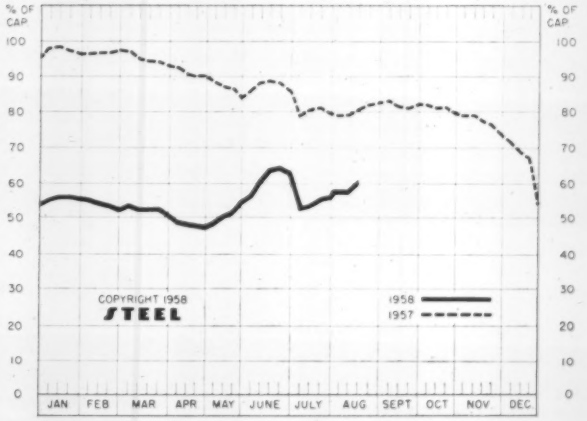
	Week Ended Aug. 17	Change	Same 1957	Week 1956
Pittsburgh	53	+ 3*	82	90
Chicago	69.5	+ 2.5	86	90.5
Eastern	60	0	86.5	94
Youngstown	53	+ 1	79	90
Wheeling	74	+ 0.5	96	96
Cleveland	55	+ 1.5	90	102
Buffalo	51.5	0	95	92.5
Birmingham	53.5	— 1	85.5	73
Cincinnati	73	+ 30.5*	79	89.5
St. Louis	74.5	—15.5	84.5	106
Detroit	70	+ 1.5*	52.5	74
Western	70	+ 2	97	78
National Rate	60.5	+ 1.5	80.5	87

INGOT PRODUCTION‡

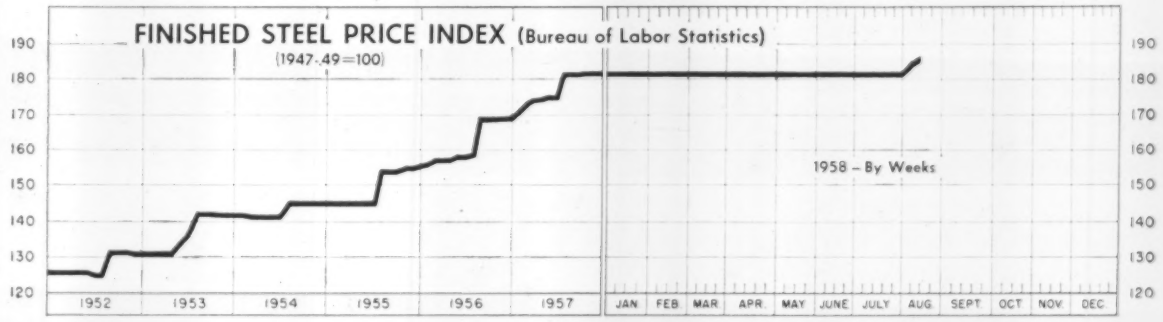
	Week Ended Aug. 17	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	103.1†	98.7	92.2	128.4
NET TONS (In thousands)	1,656†	1,586	1,481	2,062

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Aug. 12, 1958	Week Ago	Month Ago	July Avg	Year Ago
186.2	185.1†	181.5	181.5	181.5

†Revised

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 12

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.335
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.710
Tie Plates	6.600	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.545
Bars, Tool Steel, Carbon (lb)	0.554	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.673	Sheets, Electrical	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.389	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.884	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	205.710
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (110 ft)	315.213
Tubes, Boiler (100 ft)	49.130	Black Plate, Canmaking Quality (95 lb base box)	7.583
Tubing, Mechanical, Carbon (100 ft)	25.270	Wire, Drawn, Carbon	10.875
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483	Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 13 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	245.03	239.15	239.15	189.38
Index in cents per lb	6.682	6.638	6.479	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$148.74	$145.42	$146.19	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	41.33	42.00	36.67	53.83	44.17

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Aug. 13 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.425	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.425	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.725	5.715	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.30*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.275	5.275	5.275	4.10
Shapes, Std., Chicago	5.50	5.275	5.275	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.545	5.585	4.38
Plates, Pittsburgh	5.30	5.10	5.10	5.10	4.10
Plates, Chicago	5.30	5.10	5.10	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.10	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.10	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.10	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	4.925	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	4.925	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.05	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.05	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.05	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.60	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	4.925	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	4.925	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.15	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.15	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.15	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	7.65	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$96.00	$96.00	$75.50
Wire rods ½-⅝" Pitts.	6.40	6.40	6.15	6.15	4.525

PIG IRON, Gross Ton

	Aug. 13 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	69.88	60.75
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.38	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

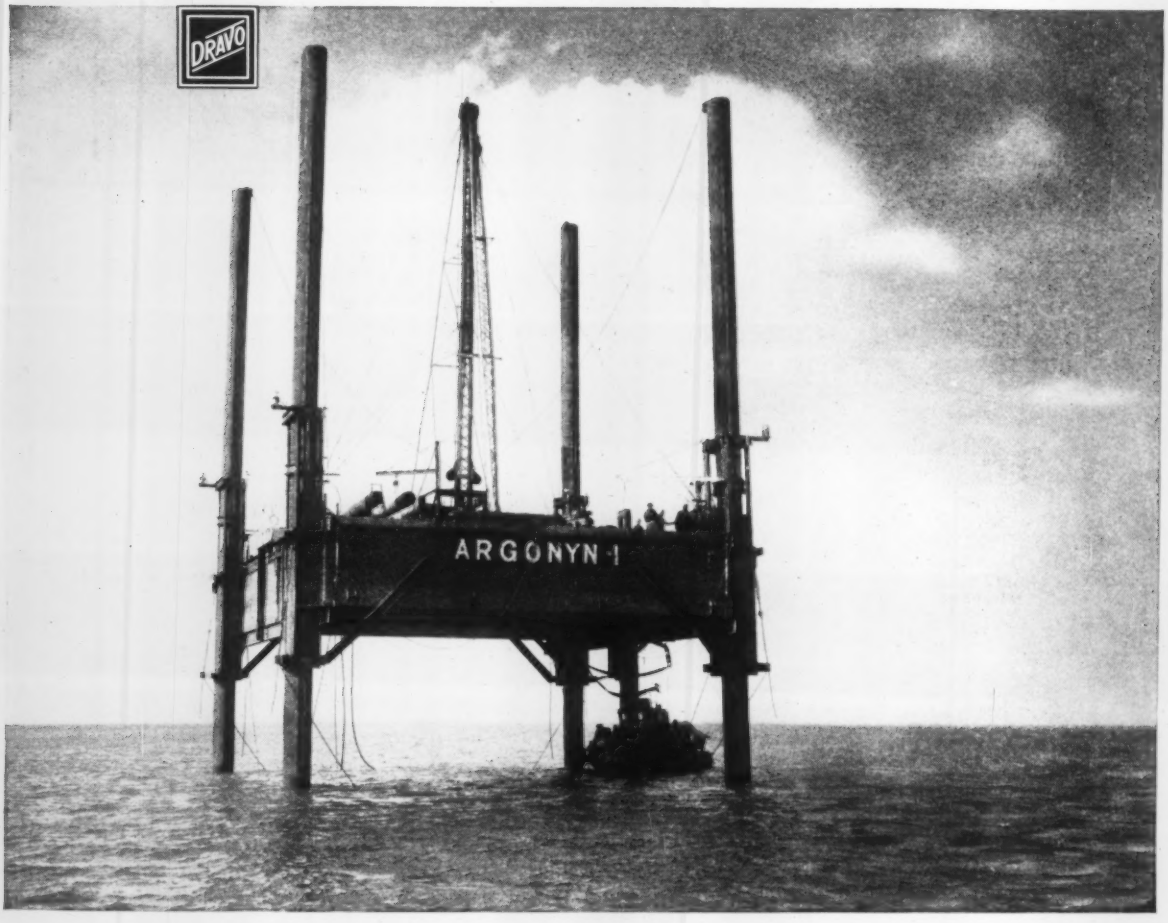
†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$42.50	$44.50	$35.50	$55.50	$44.50
No. 1 Heavy Melt, E. Pa.	38.00	38.00	35.00	52.00	43.50
No. 1 Heavy Melt, Chicago	43.50	43.50	39.50	54.00	43.50
No. 1 Heavy Melt, Valley	43.50	43.50	38.50	55.50	45.50
No. 1 Heavy Melt., Cleve.	40.00	40.00	35.00	52.50	44.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	27.50	49.50	43.75
Rails, Rerolling, Chicago	64.50	64.50	57.50	76.50	57.50
No. 1 Cast, Chicago	45.50	45.50	41.50	47.50	42.00

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75



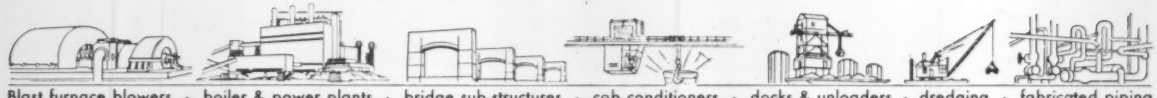
First Offshore Drilling Platform on U. S. Side of Lake Erie Built by Dravo

The first offshore gas well on the American side of Lake Erie is being drilled by New York State Natural Gas Corporation. Operations are underway, near Conneaut, Ohio, from a new mobile rig built by Dravo.

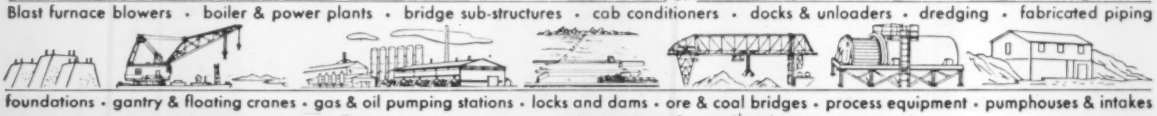
The "Argonyn-1" will work in 30 to 60 feet of water and can be towed easily from one site to another. Of welded pontoon construction, it is 50 feet square. At each location, the 130-foot-long legs are driven firmly into the lake bottom and the platform is hoisted by dual hydraulic jacks on each leg.

Dravo's wide experience on construction jobs "in or around water" can help you realize genuine economies on such projects. For information on this or the other products and services pictured below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION



Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping



foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

Steel Prices

Mill prices as reported to STEEL, Aug. 13, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 142; footnotes, page 144.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 ..... $73.50

INGOTS, Alloy (NT)

Detroit S41 ..... $77.00
Farrell,Pa. S3 ..... 77.00
Lowellville,O. S3 ..... 77.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)

Bessemer,Pa. U5 ..... $80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B3 ..... 80.00
Lackawanna,N.Y. B2 ..... 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 77.50
S.Chicago,Ill. R2, U5 ..... 80.00
S.Duquesne,Pa. U5 ..... 80.00
Sterling,Ill. N15 ..... 77.50
Youngstown R2 ..... 80.00

Carbon, Forging (NT)

Bessemer,Pa. N5 ..... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3 ..... 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 ..... 99.50
LosAngeles B3 ..... 105.50
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. C8 ..... 96.00
Seattle B3 ..... 109.50
Sharon,Pa. S3 ..... 96.00
S.Chicago R2, U5, W14 ..... 99.50
S.Duquesne,Pa. U5 ..... 99.50
S.SanFrancisco B3 ..... 105.50
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)

Bethlehem,Pa. R2 ..... $119.00
Bridgeport,Conn. C32 ..... 114.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 ..... 119.00
Conshohocken,Pa. A3 ..... 121.00
Detroit S41 ..... 114.00
Economy,Pa. B14 ..... 114.00
Farrell,Pa. S3 ..... 114.00
Fontana,Calif. K1 ..... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 ..... 119.00
Johnstown,Pa. B2 ..... 119.00
Lackawanna,N.Y. B2 ..... 119.00
LosAngeles B3 ..... 134.00
Lowellville,O. S3 ..... 114.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 ..... 114.00
Sharon,Pa. S3 ..... 114.00
S.Chicago R2,U5,W14 ..... 119.00
S.Duquesne,Pa. U5 ..... 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 ..... 122.50
S.Duquesne,Pa. U5 ..... 122.50
Warren,O. C17 ..... 122.50

SKELP

Aliquippa,Pa. J5 ..... 5.075
Munhall,Pa. U5 ..... 5.05
Pittsburgh U5 ..... 5.075
Warren,O. R2 ..... 5.05
Youngstown R2, U5 ..... 5.05

WIRE RODS

AlabamaCity,Ala. R2 ..... 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Buffalo W12 ..... 6.15
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1 ..... 6.40
Johnstown,Pa. B2 ..... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 ..... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 6.95
Minnequa,Colo. C10 ..... 6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 ..... 6.40
Pittsburg,Calif. C11 ..... 7.20
Portsmouth,O. P12 ..... 6.40
Roebling,N.J. R5 ..... 6.25
S.Chicago,Ill. R2, W14 ..... 6.40
SparrowsPoint,Md. B2 ..... 6.50
Sterling,Ill.(1) N15 ..... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 ..... 6.70

STRUCTURALS

Carbon Steel Std. Shapes

AlabamaCity,Ala. R2 ..... 5.275
Atlanta A11 ..... 5.70
Aliquippa,Pa. J5 ..... 5.50
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 ..... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1 ..... 5.50
Johnstown,Pa. B2 ..... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 ..... 5.60
Lackawanna,N.Y. B2 ..... 5.55
LosAngeles B3 ..... 5.975
Minnequa,Colo. C10 ..... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 5.925
Phoenixville,Pa. P4 ..... 5.55
Portland,Oreg. O4 ..... 6.025
Seattle B3 ..... 6.025
S.Chicago,Ill. U5, W14 ..... 5.50
S.SanFrancisco B3 ..... 5.925
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 ..... 5.975
Weirton,W.Va. W6 ..... 5.50

Wide Flange

Bethlehem,Pa. B2 ..... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 ..... 6.45
IndianaHarbor,Ind. I-2 ..... 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 ..... 5.55
S.Chicago,Ill. U5 ..... 5.50
Weirton,W.Va. W6 ..... 5.50

Alloy Std. Shapes

Aliquippa,Pa. J5 ..... 6.55
Clairton,Pa. U5 ..... 6.55
Gary,Ind. U5 ..... 6.55
Houston S5 ..... 6.90
KansasCity,Mo. S5 ..... 6.90
Munhall,Pa. U5 ..... 6.55
S.Chicago,Ill. U5 ..... 6.55
S.Chicago,Ill. W14 ..... 6.80

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 ..... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 ..... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1 ..... 8.05
Johnstown,Pa. B2 ..... 8.10
KansasCity,Mo. S5 ..... 8.15
Lackawanna,N.Y. B2 ..... 8.10
LosAngeles B3 ..... 8.45
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.50
S.Chicago,Ill. U5, W14 ..... 8.05
S.SanFrancisco B3 ..... 8.40
Struthers,O. Y1 ..... 8.05

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ..... 7.80
Ind.Harbor,Ind. I-2 ..... 8.05
Lackawanna,N.Y. B2 ..... 7.80
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05

PILING

BEARING PILES

Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 ..... 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 ..... 5.50

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ..... 6.50
Lackawanna,N.Y. B2 ..... 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 ..... 6.50
Weirton,W.Va. W6 ..... 6.50

PLATES

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..... 5.10
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 ..... 5.10
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.20
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 ..... 5.30
Ecorse,Mich. G5 ..... 5.10
Fairfield,Ala. T2 ..... 5.30
Fontana,Calif.(30) K1 ..... 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity, Ill. G4 ..... 5.40
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 ..... 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 ..... 5.30
Mansfield,O. E6 ..... 5.10
Minnequa,Colo. C10 ..... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.00
Sharon,Pa. S3 ..... 5.10
S.Chicago,Ill. U5, W14 ..... 5.30
SparrowsPoint,Md. B2 ..... 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 ..... 5.30
Warren,O. R2 ..... 5.10
Youngstown U5, Y1 ..... 5.30

PLATES, Carbon Abras. Resist.

Claymont,Del. C22 ..... 6.75
Fontana,Calif. K1 ..... 7.25
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 ..... 7.05

PLATES, Wrought Iron

Economy,Pa. B14 ..... 13.15

PLATES, H.S., L.A.

Aliquippa,Pa. J5 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.625
Coatesville,Pa. L7 ..... 7.625
Conshohocken,Pa. A3 ..... 7.95
Economy,Pa. B14 ..... 7.625
Ecorse,Mich. G5 ..... 7.625
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.625
Fontana,Calif.(30) K1 ..... 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 ..... 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.525
Sharon,Pa. S3 ..... 7.625
S.Chicago,Ill. U5, W14 ..... 7.95
SparrowsPoint,Md. B2 ..... 7.95
Warren,O. R2 ..... 7.625
Youngstown U5, Y1 ..... 7.95

PLATES, ALLOY

Aliquippa,Pa. J5 ..... 7.20
Claymont,Del. C22 ..... 7.50
Coatesville,Pa. L17 ..... 7.50
Economy,Pa. B14 ..... 7.20
Fontana,Calif. K1 ..... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 ..... 7.20
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.20
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.20
Seattle B3 ..... 8.10
Sharon,Pa. S3 ..... 7.20
S.Chicago,Ill. U5, W14 ..... 7.50
SparrowsPoint,Md. B2 ..... 7.50
Youngstown Y1 ..... 7.20

FLOOR PLATES

Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 ..... 6.375
Ind.Harbor,Ind. I-2 ..... 6.375
Munhall,Pa. U5 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375

PLATES, Ingot Iron

Ashland c.l.(15) A10 ..... 5.35
Ashland l.c.l.(15) A10 ..... 5.85
Cleveland c.l. R2 ..... 5.85
Warren,O. c.l. R2 ..... 5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2 ..... 5.675
Aliquippa,Pa.(9) J5 ..... 5.675
Alton,Ill. L1 ..... 5.875
Atlanta(9) A11 ..... 5.875
Bessemer,Ala.(9) T2 ..... 5.425
Birmingham(9) C15 ..... 5.675
Buffalo(9) R2 ..... 5.675
Canton,O.(23) R2 ..... 6.15
Clairton,Pa.(9) U5 ..... 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 ..... 5.675
Emeryville,Calif. J7 ..... 6.425
Fairfield,Ala.(9) T2 ..... 5.675
Fairless,Pa.(9) U5 ..... 5.825
Fontana,Calif.(9) K1 ..... 6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1 ..... 5.675
Johnstown,Pa.(9) B2 ..... 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5 ..... 5.925
Lackawanna(9) B2 ..... 5.675
LosAngeles(9) B3 ..... 6.125
Massillon,O.(23) R2 ..... 6.15
Midland,Pa.(23) C18 ..... 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.125
N.Tonawanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..... 5.425
Pittsburg,Calif.(9) C11 ..... 6.375
Pittsburgh(9) J5 ..... 5.675
Portland,Oreg. O4 ..... 6.175
Seattle B3, N14 ..... 6.175
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 ..... 5.675
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15 ..... 5.675
Sterling,Ill.(9) N15 ..... 5.775
Struthers,O.(9) Y1 ..... 5.675
Tonawanda,N.Y. B12 ..... 5.425
Torrance,Calif.(9) C11 ..... 6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5 ..... 5.675

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 ..... 6.55
Buffalo R2 ..... 6.725
Canton,O. R2, T7 ..... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.475
Economy,Pa. B14 ..... 6.475
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.475
Fontana,Calif. K1 ..... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1 ..... 6.725
Johnstown,Pa. B2 ..... 6.725
KansasCity,Mo. S5 ..... 6.975
Lackawanna,N.Y. B2 ..... 6.725
Lowellville,O. S3 ..... 6.475
LosAngeles B3 ..... 7.525
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.475
S.Chicago R2, U5, W14 ..... 6.725
S.Duquesne,Pa. U5 ..... 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..... 7.925
Bessemer,Ala. T2 ..... 7.925
Bethlehem,Pa. B2 ..... 8.30
Clairton,Pa. U5 ..... 7.925
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.175
Fairfield,Ala. T2 ..... 7.925
Fontana,Calif. K1 ..... 8.625
Gary,Ind. U5 ..... 7.925
Houston S5 ..... 8.175
Ind.Harbor,Ind. Y1 ..... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 ..... 8.175
Lackawanna,N.Y. B2 ..... 8.30
LosAngeles B3 ..... 8.625
Pittsburgh J5 ..... 7.925
Seattle B3 ..... 8.675
S.Chicago,Ill. U5, W14 ..... 7.925
S.Duquesne,Pa. U5 ..... 7.925
S.SanFrancisco B3 ..... 8.675
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 7.925

BAR SIZE ANGLE; H.R. Carbon

Bethlehem,Pa.(9) B2 ..... 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5 ..... 5.925
Lackawanna(9) B2 ..... 5.675
Sterling,Ill. N15 ..... 5.525
Sterling,Ill.(1) N15 ..... 5.425
Tonawanda,N.Y. B12 ..... 5.425

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.125
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 ..... 6.175
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.175

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5 ..... 6.55
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 ..... 7.05
Pittsburgh J5 ..... 6.55
Youngstown U5 ..... 6.80

BARS, C. F. Leaded (Including leaded extra)

Carbon

*LosAngeles P2, S30 ..... 11.75**

Alloy

Ambridge,Pa. W18 ..... 10.175
BeaverFalls,Pa. M12 ..... 10.175
Camden,N.J. P13 ..... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 ..... 10.35
SpringCity,Pa. K3 ..... 10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ..... 7.65
BeaverFalls,Pa. M12,R2 7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.30
Cleveland A7, C20 ..... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.30
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 ..... 7.30
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 ..... 7.65
Hammond,Ind. J5, L2 ..... 7.65
Hartford,Conn. R2 ..... 8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 ..... 9.10
LosAngeles(49) P2, R2 9.10
Mansfield,Mass. B2 ..... 8.20
Massillon,O. R2, R8 ..... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 ..... 7.30
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 ..... 7.90
Putnam,Conn. W18 ..... 8.20
Readville,Mass. C14 ..... 8.20
S.Chicago,Ill. W14 ..... 7.65
SpringCity,Pa. K3 ..... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Willimantic,Conn. J5 ..... 8.15
Waukegan,Ill. A7 ..... 7.65
Youngstown F3, Y1 ..... 7.65

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ..... 9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 ..... 8.925
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 8.775
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 ..... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 8.775
Donora,Pa. A7 ..... 8.775
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 ..... 8.775
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 ..... 9.025
Hammond,Ind. J5, L2 ..... 9.025
Hartford,Conn. R2 ..... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 ..... 9.025
LosAngeles P2, S30 ..... 11.00
Mansfield,Mass. B5 ..... 9.325
Massillon,O. R2, R8 ..... 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 ..... 9.225
S.Chicago,Ill. W14 ..... 9.025
SpringCity,Pa. K3 ..... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 8.775
Willimantic,Conn. J5 ..... 9.325
Worcester,Mass. A7 ..... 9.075
Youngstown F3, Y1 ..... 9.025

BARS, Reinforcing (To fabricators)

AlabamaCity,Ala. R2	.5.675
Atlanta A11	*5.675*
Birmingham C15	*5.675*
Buffalo R2	5.675
Cleveland R2	5.675
Ecorse,Mich. G5	5.675
Emeryville,Calif. J7	*6.425*
Fairfield,Ala. T2	5.675
Fairless,Pa. U5	5.825
Fontana,Calif. K1	*6.375*
Ft.Worth,Tex.(4)(26)T4	5.875
Gary,Ind. U5	5.675
Houston S5	5.925
Ind.Harbor,Ind. I-2, Y1	5.675
Johnstown,Pa. B2	5.675
Joliet,Ill. P22	5.675
KansasCity,Mo. S5	5.925
Kokomo,Ind. C16	*5.775*
Lackawanna,N.Y. B2	5.675
LosAngeles B3	6.125
Madison,Ill. L1	5.625
Milton,Pa. M18	*5.825*
Minnequa,Colo. C10	*6.125*
Niles,Calif. P1	6.125
Pittsburg,Calif. C11	6.375
Pittsburgh J5	5.675
Portland,Oreg. O4	6.175
SandSprings,Okla. S5	5.925
Seattle B3, N14	6.175
S.Chicago,Ill. R2, W14	5.675
S.Duquesne,Pa. U5	5.675
S.SanFrancisco B3	6.175
SparrowsPoint,Md. B2	5.675
Sterling,Ill.(1) N15	*5.675*
Sterling,Ill. N15	*5.775*
Struthers,O. Y1	5.675
Tonawanda,N.Y. B12	6.00
Torrance,Calif. C11	6.375
Youngstown R2, U5	5.675

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8	*8.15*
Chicago U8	*7.41*
Cleveland U8	*7.39*
Houston S5	7.35
Johnstown,Pa. B2	7.08
KansasCity,Mo. S5	7.35
Lackawanna,N.Y. B2	6.85
Marion,O. P11	6.70
Newark,N.J. U8	*7.80*
Philadelphia U8	*7.63*
Pittsburgh J5, U8	*7.35*
SandSprings,Okla. S5	7.60
Seattle B3, N14	7.70
SparrowsPt.,Md. B2	7.08
St.Paul U8	*8.17*
Williamsport,Pa. S19	*7.25*

BARS, Wrought Iron

Economy,Pa.(S.R.)B14	14.45
Economy,Pa.(D.R.)B14	18.00
Economy(Staybolt)B14	18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2	5.575
ChicagoHts.(4)(44) I-2	5.675
ChicagoHts.(4) C2	*5.675*
Franklin,Pa.(3) F5	*5.575*
Franklin,Pa.(4) F5	*5.675*
JerseyShore,Pa.(3) J8	5.30
Marion,O.(3) P11	5.325
Tonawanda(3) B12	5.325
Tonawanda(4) B12	6.00

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2	5.10
Allenport,Pa. P7	5.10
Aliquippa,Pa. J5	5.10
Ashland,Ky.(8) A10	5.10
Cleveland J5, R2	5.10
Conshohocken,Pa. A3	5.15
Detroit(8) M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Fairless,Pa. U5	5.15
Fontana,Calif. K1	5.675
Gary,Ind. U5	5.10
Geneva,Utah C11	5.20
GraniteCity,Ill.(8) G4	5.20
Ind.Harbor,Ind. I-2, Y1	5.10
Irvin,Pa. U5	5.10
Lackawanna,N.Y. B2	5.10
Mansfield,O. E6	*5.10*
Munhall,Pa. U5	5.10
Newport,Ky.(8) A2	*5.10*
Niles,O. M21, S3	5.10
Pittsburg,Calif. C11	5.80
Pittsburgh J5	5.10
Portsmouth,O. P12	5.10
Riverdale,Ill. A1	5.10
Sharon,Pa. S3	5.10
S.Chicago,Ill. U5, W14	5.10
SparrowsPoint,Md. B2	5.10
Steubenville,O. W10	5.10
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5, Y1	5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21	*6.275*

SHEETS, H.R. Alloy

Gary,Ind. U5	8.10
Ind.Harbor,Ind. Y1	8.10
Irvin,Pa. U5	8.10
Munhall,Pa. U5	8.10
Newport,Ky. A2	*8.40*
Youngstown U5, Y1	8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5	7.525
Cleveland J5, R2	7.525
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.525
Fairfield,Ala. T2	7.525
Fairless,Pa. U5	7.575
Farrell,Pa. S3	7.525
Fontana,Calif. K1	8.025
Gary,Ind. U5	7.525
Ind.Harbor,Ind. I-2, Y1	7.525
Irvin,Pa. U5	7.525
Lackawanna(35) B2	7.525
Munhall,Pa. U5	7.525
Pittsburgh J5	7.525
S.Chicago,Ill. U5, W14	7.525
Sharon,Pa. S3	7.525
SparrowsPoint(36) B2	7.525
Warren,O. R2	7.525
Weirton,W.Va. W6	7.525
Youngstown U5, Y1	7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10	5.35
Cleveland R2	5.875
Warren,O. R2	5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	7.05
Middletown,O. A10	6.775
Warren,O. R2	7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2	6.275
Allenport,Pa. P7	6.275
Aliquippa,Pa. J5	6.275
Cleveland J5, R2	6.275
Conshohocken,Pa. A3	6.325
Detroit M1	6.275
Ecorse,Mich. G5	6.275
Fairfield,Ala. T2	6.275
Fairless,Pa. U5	6.325
Follansbee,W.Va. F4	6.275
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.275
GraniteCity,Ill. G4	6.375
Ind.Harbor,Ind. I-2, Y1	6.275
Irvin,Pa. U5	6.275
Lackawanna,N.Y. B2	6.275
Mansfield,O. E6	*6.275*
Middletown,O. A10	6.275
Newport,Ky. A2	*6.275*
Pittsburg,Calif. C11	7.225
Pittsburgh J5	6.275
Portsmouth,O. P12	6.275
SparrowsPoint,Md. B2	6.275
Steubenville,O. W10	6.275
Warren,O. R2	6.275
Weirton,W.Va. W6	6.275
Yorkville,O. W10	6.275
Youngstown Y1	6.275

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Aliquippa,Pa. J5	9.275
Cleveland J5, R2	9.275
Ecorse,Mich. G5	9.275
Fairless,Pa. U5	9.325
Fontana,Calif. K1	10.275
Gary,Ind. U5	9.275
Ind.Harbor,Ind. I-2,Y1	9.275
Irvin,Pa. U5	9.275
Lackawanna(37) B2	9.275
Pittsburgh J5	9.275
SparrowsPoint(38) B2	9.275
Warren,O. R2	9.275
Weirton,W.Va. W6	9.275
Youngstown Y1	9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2	7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2	6.875‡
Ashland,Ky. A10	6.875†
Canton,O. R2	6.875‡
Dover,O. E6	*6.875†*
Fairfield,Ala. T2	6.875†
Gary,Ind. U5	6.875†
GraniteCity,Ill. G4	6.975*
Ind.Harbor,Ind. I-2	6.875†
Irvin,Pa. U5	6.875†
Kokomo,Ind. C16	6.975‡
MartinsFerry,O. W10	6.875*
Middletown,O. A10	6.875†
Pittsburg,Calif. C11	7.625*
Pittsburgh J5	6.875*
SparrowsPt.,Md. B2	6.875†
Warren,O. R2	6.875†
Weirton,W.Va. W6	6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1	7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5	10.025
SparrowsPt.(39) B2	10.025
Pittsburgh J5	10.025

SHEETS, Galvannealed Steel

Canton,O. R2	7.275
Irvin,Pa. U5	7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10	7.125
Middletown,O. A10	7.125

SHEETS, Electrogalvanized

Cleveland(28) R2	7.65
Niles,O.(28) R2	7.65
Youngstown J5	7.50
Weirton,W.Va. W6	7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1)	9.525
Butler,Pa. A10 (type 2)	9.625

SHEETS, Enameling Iron

Ashland,Ky. A10	6.775
Cleveland R2	6.775
Fairfield,Ala. T2	6.775
Gary,Ind. U5	6.775
GraniteCity,Ill. G4	6.875
Ind.Harbor,Ind. I-2,Y1	6.775
Irvin,Pa. U5	6.775
Middletown,O. A10	6.775
Niles,O. M21, S3	*6.775*
Youngstown Y1	6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4	8.70
Ind.Harbor,Ind. I-2	8.70
Mansfield,O. E6	*8.70*
Yorkville,O. W10	*8.70*

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10	7.225
Gary,Ind. U5	7.225
Mansfield,O. E6	*7.225*
Middletown,O. A10	7.225
Niles,O. M21, S3	*7.225*
Warren,O. R2	7.225
Weirton,W.Va. W6	7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 CarpenterSteelofN.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine&Special.Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W.Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.
W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	*5.30*
Ashland,Ky.(8) A10	5.10
Atlanta A11	*5.10*
Bessemer,Ala. T2	5.10
Birmingham C15	*5.10*
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Fontana,Calif. K1	5.675
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
Minnequa,Colo. C10	*6.20*
Riverdale,Ill. A1	5.10
SanFrancisco S7	*6.60*
Seattle(25) B3	6.10
Seattle N14	6.35
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Sterling,Ill.(1) N15	4.925
Sterling,Ill. N15	5.025
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.10
Gary,Ind. U5	8.10
Houston S5	8.35
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.35
LosAngeles B3	9.30
Lowellville,O. S3	8.10
Newport,Ky. A2	*8.40*
Sharon,Pa. A2, S3	*8.40*
S.Chicago,Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	*7.575*
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	*7.425*
Boston T6	*7.975*
Buffalo S40	*7.425*
Cleveland A7, J5	7.425
Dearborn,Mich. D3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.525
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	*7.525*
Ind.Harbor,Ind. Y1	7.425
Indianapolis J5	7.575
LosAngeles J5	9.325
LosAngeles C1	9.20
NewBedford,Mass. R10	*7.875*
NewBritain,Conn. S15	*7.875*
NewCastle,Pa. B4, E5	7.15
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.15
Pawtucket,R.I. R3	*7.975*
Pawtucket,R.I. N8	*7.975*
Philadelphia P24	*7.875*
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.15
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.60
Wallingford,Conn. W2	*7.875*
Warren,O. R2, T5	7.425
Weirton,W.Va. W6	7.425
Worcester,Mass. A7	7.975
Youngstown J5, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.05
Farrell,Pa. S3	15.05
FranklinPark,Ill. T6	15.05
Harrison,N.J. C18	15.05
Indianapolis J5	15.20
Lowellville,O. S3	15.05
Pawtucket,R.I. N8	15.40
Riverdale,Ill. A1	15.05
Sharon,Pa. S3	*15.55*
Worcester,Mass. A7	15.35
Youngtown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. D3	10.80
Dover,O. G6	10.45
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
NewYork W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

Weirton,W.Va. W6	10.85
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	*7.525**
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale,Ill. A1	*5.675*
Sharon,Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

SILICON STEEL

COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10		*11.70*	*12.40*	*13.55*	*14.65*
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	*9.875**	*11.70*	*12.40*	*13.55*	*14.65*
Newport,Ky. A2	*9.875*	*11.70*	*12.40*	*13.55*	*14.65*
Niles,O. M21	*9.875*	*11.70*	*12.40*	*13.55*	
Vandergrift,Pa. U5	9.875†	11.70	12.40	13.55	14.65
Warren,O. R2	9.875†	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	*8.10*

SHEETS (22 Ga., coils & cut lengths Fully Processed (Semiprocessed ½c lower)

	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	*8.20*
Atlanta A1	*8.00*
Bartonville,Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. MS	7.75
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	7.75
Houston S5	8.25
Jacksonville,Fla. MS	8.00
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	*8.10*
LosAngeles B3	8.60
Minnequa,Colo. C10	*8.25*
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	*8.00*
Palmer,Mass. W12	7.95
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	*8.95*
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	*8.00*
Sterling,Ill. N15	*8.10*
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	*8.00*

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	12.85
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	12.95
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	*9.95*
Buffalo W12	9.30
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.25
Minnequa,Colo. C10	*9.95*
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.75
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	*10.70*
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7, J4, T6	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	*9.95*
Bartonville,Ill. K4	9.40
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.25
Milbury,Mass.(12) N6	9.60
Minnequa,Colo. C10	*9.95*
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.50
Palmer,Mass.(12) W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	*10.70*
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester A7, J4, T6	9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville,Ind. MS	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. MS	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	15.60
Minnequa,Colo. C10	15.85
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	15.80
Palmer,Mass. W12	15.90
S.SanFrancisco C10	16.45
Waukegan,Ill. A7	15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE (A)

Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
St.Louis L8	12.75
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock

	Colo.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2,	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

	Col.
Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPt,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa. 9-14½ga. J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	....
Craw'dsville MS	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville M8	17.25	19.05
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester A7	17.45	....

WIRE, Merchant Quality

	An'ld	Galv.
Ala.City,Ala. R2	8.65	9.20**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	8.75	9.425
Buffalo W12	8.65	9.20†
Cleveland A7	8.65	....
Crawfordsville MS	8.75	9.425
Donora,Pa. A7	8.65	9.20†
Duluth A7	8.65	9.20†
Fairfield T2	8.65	9.20†
Houston(48) S5	*9.25*	*9.80***
Jacks'ville,Fla. MS	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	8.65	9.20†
Kans.City(48) S5	*9.25*	*9.80***
Kokomo C16	8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	8.90	9.45**
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	8.95	9.50†
Pitts.Calif. C11	9.60	10.15†
Rankin,Pa. A7	8.65	9.20†
S.Chicago R2	8.65	9.20**
S.SanFran. C10	9.60	10.15**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575††
Sterling(1) (48)	8.80	9.475††
Struthers,O. Y1	*9.00*	*9.65‡*
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts

Full Size Body (cut thread)	
½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0
Undersized Body (rolled thread)	
½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts

Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0

Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅛ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5
Square Nuts, Reg. &	
Heavy, Hot Galvanized:	
All sizes	41.0
Hex Nuts, Reg. &	
Heavy, Hot Pressed:	
¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5
Hex Nuts, Reg. &	
Heavy, Cold Punched:	
¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5
Hex Nuts, All Types,	
Hot Galvanized:	
¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5
Hex Nuts, Semifinished,	
Heavy (Incl. Slotted):	
¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:	
⅝ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:

6 in. and shorter:	
⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0
Longer than 6 in.:	
⅝ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0
Flat Head Capscrews:	
¾ in. and smaller	+ 76.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam.:	
6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25

⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All	Tee Rails 60-lb Under
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....(16)	6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	*9.125*

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. 1-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebonan,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	10.10
Seattle B3	10.25
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) New Haven, Conn. base.
(21) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) Tc fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	0.68		0.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	*0.25*	*+15*	*3.25*	*+11*	*6.75*	*+6.5*	*9.25*	*+5.75*
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	*4.5*	*+22*	*+8.5*	*+32*	*+19.5*	*+41*	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	*+10.75*	*+26*	*+7.75*	*+22*	*+4.25*	*+17.5*	*+1.75*	*+10.75*
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	*4.5*	*+22*	*+8.5*	*+32*	*+19.5*	*+41*	....	....	....	....	....	....	....	....
Sharon, Pa. M6	*3.5*	*+23*	*+9.5*	*+33*	*+20.5*	*+42*	*2.25*	*+13*	*5.25*	*+9*	*8.75*	*+4.5*	*11.25*	*+3.75*
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	*4.5*	*+22*	*+8.5*	*+32*	*+19.5*	*+41*	*2.25*	*+13*	*5.25*	*+9*	*8.75*	*+4.5*	*11.25*	*+3.75*
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	*9.75*	*+4.75*	*10.25*	*+4.25*	*11.75*	*+4.5*	*11.75*	*+4.5*	*1.25*	*+15.5*	*1.25*	*+15.5*
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	*+1.25*	*+15.75*	*+0.75*	*+15.25*	*0.75*	*+15.5*	*0.75*	*+15.5*	*+9.75*	*+26.5*	*+9.75*	*+26.5*
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	*11.75*	*+2.75*	*12.25*	*+2.25*	*13.75*	*+2.5*	*13.75*	*+2.5*	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	*11.75*	*+2.75*	*12.25*	*+2.25*	*13.75*	*+2.5*	*13.75*	*+2.5*	*3.25*	*+13.5*	*3.25*	*+13.5*
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	35.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates—Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.330	Cr-Hot Work	0.505
Extra Carbon	0.385	W-Cr Hot Work	0.530
Special Carbon	0.505	V-Cr Hot Work	0.550
Oil Hardening	0.505	Hi-Carbon-Cr	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....	....	4.330
18.25	4.25	1	4.75	....	....	2.545
18	4	2	9	....	....	2.915
18	4	2	....	....	....	2.005
18	4	1	....	....	....	1.840
9	3.5	....	....	....	....	1.425
13.5	4	3	....	....	....	2.105
13.75	3.75	2	5	....	....	2.485
6.4	4.5	1.9	....	5	....	1.345
6	4	3	....	6	....	1.590
1.5	4	1	....	8.5	....	1.200

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Nevillelsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth 1-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or persentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls, N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Nevillelsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	9.68	....	8.70	8.65	12.33#	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.25	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.25[2]	10.30[2]	11.90[2]	57.60	8.90	8.70[2]	12.10[2]	16.10	8.50[2]	8.65[2]	10.80[2]
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51#	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡⅝ in. to 4 in. wide, inclusive; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads; effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over; f.o.b. Riverton or Camden, N. J., west of Mississippi River	10.50 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed	
Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper:	
Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.50-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.55
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68.5%	14.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.15 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00
South African Transvaal	
48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00
Turkish	
48% 3:1	$51.00-55.00
Domestic	
Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens	
Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00
Per ton, bulk, ovens	
Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton. Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, SM x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅜ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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Scrap Prices Move Slightly Lower

Lack of buying interest due chiefly to consumers' resistance to recent advances forces downward adjustments in many districts. STEEL's composite eases 67 cents to $42

Scrap Prices, Page 152

Pittsburgh—After two weeks of feverish activity, the scrap market here is again dormant. Prices of the top grades are off about $2 a ton. Brokers attribute the weakness to lack of interest, but predict resumption of the upward movement as steelmaking gains momentum.

During the recent flurry, district mills bought about 50,000 tons of scrap. So much metal hit the market that a weakening of the price structure was inevitable. Some dealers insist that they won't part with No. 1 heavy melting scrap for less than $45 a ton. No one is offering that much. Pennsylvania Railroad scrap, usually sold at premium prices, brought less this month than material offered by other carriers.

Chicago — An extremely quiet scrap market is serving as a price stabilizer, following the $2 to $3 break in prices a week ago. That reversal of an upswing of several weeks had come when a leading mill failed to buy in late July after widespread belief it would do so. It is unlikely that the mill will re-enter the market for at least a month.

Several steelmakers are resisting the sharply higher prices of recent weeks by increasing their use of hot metal in furnace charges. That and general apathy of buyers are strong offsets to a rising steelmaking rate. At 69.5 per cent of capacity last week, operations stood second to the year's high of 71 per cent in June.

New York — Scrap brokers have advanced their buying prices $1 a ton on machine shop turnings to $9-$10, mixed borings and turnings to $10-$11, and short shovel turnings to $12-$13. Prices on 18-8 stainless borings and turnings are higher at $60-$65.

Major open-hearth grades and cast iron grades are steady with trading generally on the slow side.

Cleveland—Sales of open-hearth scrap continue quiet in this area and in the Valley. Prices held gains made last week but showed no inclination to move higher.

Youngstown—The scrap market here is showing some evidences of a weaker tone in line with the price declines in Pittsburgh. While no new orders have been placed, some mills are showing a disposition to back off from the most recent orders placed for No. 1 heavy melting at $43 a gross ton. Apparently, the industry is waiting to see what happens in the automobile industry when new models come out. Some observers feel they may get a pretty fair reception, which will reflect itself in both scrap and steel.

*Product Development by William M. Schmidt Associates.

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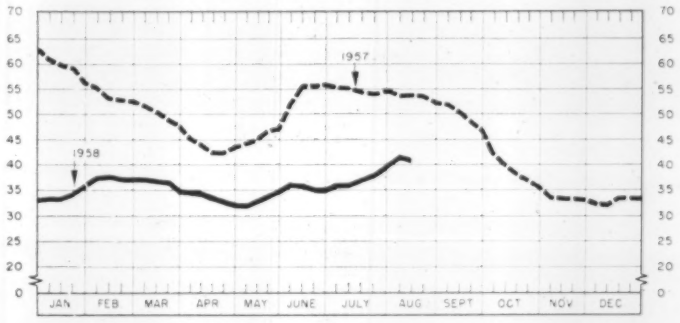
STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



Aug. 13 1958	Week Ago	Month Ago	Year Ago	July Avg
$41.33	$42.00	$36.67	$53.50	$37.54

Youngstown—The scrap market remains firm and quiet. No orders have been reported since last week's for No. 1 heavy melting at $43 a ton. Supplies are plentiful even if large scale buying of steel should develop. At present prices, the market is near the point where more blast furnaces could be economically lighted.

Detroit—Scrap moving off local docks into Canada and the Valley area reflects a weakening in the dealer market here. Dealer-to-dealer transactions show a $1 to $2 a ton drop since the end of the previous week. Local mills are doing little buying and apparently are waiting to see how much more scrap moves off the dock. The market is expected to stay relatively soft until new model car production begins.

Buffalo — The scrap market marked time last week as dealers shipped against August orders. The undertone remained strong, and several dealers predict price advances here when new mill orders are written.

The market for No. 1 heavy melting continued nominal because of insufficient volume to pinpoint the price. On the basis of out-of-district shipments, No. 1 heavy melting is worth at least $34 to $35 a ton.

Serving as a check on a runaway market is the strong inventory position of Buffalo mills. They have sizable stocks of all grades and can remain out of the market if they feel prices are getting out of hand.

Cincinnati—Its forward momentum lost, the scrap market is churning about in indecision. There are no clear trends and no new purchases to provide a test on steelmaking grades. Brokers think the market may turn down again before it shows a new pickup. Cast grades are firmly supported on strong out-of-city buying interest. No. 1 heavy melting is quoted at $38.50-$39.50, brokers' buying price.

St. Louis—Scrap prices are still moving upward gradually, especially those for cast grades. No. 1 cupola and clean auto cast advanced $3 to $4 a ton last week. Demand remains strong, although the volume of business booked is not heavy. Some scrap brokers expect a period of price stability to be followed by another upward movement after mid-September.

Birmingham — Scrap buying in this district was slow last week, with recent orders still being filled. Brokers say dealers are still resisting the recent price advance. Some difficulty is reported in filling commitments. Most of the new buying in the domestic market is confined to cast, with prices holding steady after recent increases. Some South Atlantic ports report export activity.

Houston—The scrap market is marking time here. Many sellers are waiting for what they think

(*Please turn to Page* 157)

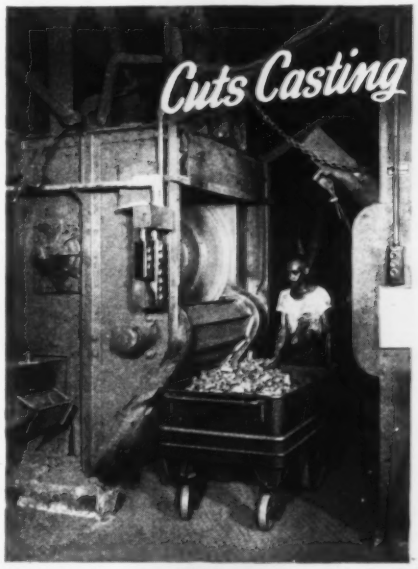


Illustration shows one of 25 Sterling Heavy Duty Trucks in daily use at the Green Foundry, St. Louis, Mo.

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FOUNDRY EQUIPMENT

A 5656-1/4R

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Aug 13, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Aug. 13	$41.33
Aug. 6	42.00
July Avg.	37.54
Aug. 1957	53.33
Aug. 1953	43.40

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	35.00-36.00
No. 1 dealer bundles	*42.00-43.00*
No. 2 bundles	*41.00-42.00*
No. 1 busheling	*42.00-43.00*
No. 1 factory bundles	49.00-50.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	47.00-48.00
3 ft lengths	46.00-47.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	49.00-50.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	*52.00-53.00*
Angles, splice bars	53.00-54.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	*185.00-190.00*
18-8 turnings	100.00-105.00
430 bundles & solids	*105.00-110.00*
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	44.00-45.00
No. 1 hvy melt, dealer	42.00-43.00
No. 2 heavy melting	36.00-37.00
No. 1 factory bundles	48.00-49.00
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	29.00-30.00
No. 1 busheling, indus.	44.00-45.00
No. 1 busheling, dealer	42.00-43.00
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	*23.00-24.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 3 ft	*48.00-49.00*
Punchings & plate scrap	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	43.00-44.00
Unstripped motor blocks	*36.00-37.00*
Clean auto cast	51.00-52.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	55.00-56.00
Axles	67.00-68.00
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	*195.00-200.00*
18-8 turnings	*105.00-110.00*
430 bundles & solids	*105.00-110.00*
430 turnings	*60.00-65.00*

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00†
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00†
Machine shop turnings	15.00-16.00†
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00†

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	46.00-47.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Mixed borings, turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	49.00-50.00
Low phos, punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00†
Heavy breakable cast	36.00-37.00
Stove plate	46.00-47.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	39.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	39.00
No. 1 busheling	41.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	*48.00*
Charging box cast	39.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	*48.00*
Stove plate	*45.50*

Railroad Scrap

No. 1 R.R. heavy melt.	*44.50*
Rails, 18 in. and under	52.00
Rails, random lengths	48.00
Rails, rerolling	*61.00*
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	*22.00-23.00*
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	21.00-22.00
Short shovel turnings	22.00-23.00
Bars, crops and plates	44.00-45.00
Structurals & plates	44.00-45.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	51.00-52.00
Unstripped motor blocks	41.00-42.00
Charging box cast	22.00-23.00
No. 1 wheels	*39.00-40.00*

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	59.00-60.00
Rails, random lengths	45.00-46.00
Angles, splice bars	*46.00-47.00*

PHILADELPHIA

No. 1 heavy melting	38.00
No. 2 heavy melting	34.00
No. 1 bundles	38.00
No. 2 bundles	25.00†
No. 1 busheling	38.00
Electric furnace bundles	39.00
Mixed borings, turnings	19.00†
Short shovel turnings	23.00
Machine shop turnings	20.00
Heavy turnings	33.00
Structurals & plates	42.00-43.00
Couplers, springs, wheels	*45.50*
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast	*42.00*
Malleable	58.00-59.00
Drop broken machinery	48.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00-33.00
No. 2 bundles	19.00-20.00
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*10.00-11.00*
Short shovel turnings	*12.00-13.00*
Low phos (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	27.00-28.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	165.00-170.00
18-8 borings, turnings	*60.00-65.00*
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos, structurals and plate, 5 ft and under	39.00-40.00
2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	38.00-39.00
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	33.50-34.50
No. 1 bundles	38.50-39.50
No. 2 bundles	26.00-27.00
No. 1 busheling	38.50-39.50
Machine shop turnings	19.00-20.00
Mixed borings, turnings	18.00-19.00
Short shovel turnings	21.00-22.00
Cast iron borings	18.00-19.00
Low phos. 18 in.	42.00-43.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1. R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	53.00-54.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	21.00†
Machine shop turnings	14.00
Short shovel turnings	17.00
Low phos. plates & structurals	39.00

Cast Iron Grades

No. 1 cupola	42.00
Heavy breakable	30.00†
Unstripped motor blocks	36.00

Railroad Scrap

No. 1 R.R. heavy melt	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	24.00
No. 2 heavy melting	21.00
No. 1 bundles	24.00
No. 2 bundles	17.00
No. 1 busheling	24.00
Machine shop turnings	6.00-7.00
Mixed borings, turnings	6.00-7.00
Short shovel turnings	7.00-8.00
No. 1 cast	30.00
Mixed cupola cast	29.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	*37.00-38.00*
No. 2 bundles	23.00-24.00
No. 1 busheling	*34.00-35.00*
Machine shop turnings	11.00-12.00
Mixed borings, turnings	12.00-13.00
Short shovel turnings	13.00-14.00
Punchings & plate	*34.00-35.00*

Cast Iron Grades

No. 1 cupola	*38.00-39.00*
Stove plate	*29.00-30.00*
Charging box cast	*29.00-30.00*
Heavy breakable	*28.00-29.00*
Unstripped motor blocks	*18.00-19.00*
Clean auto cast	*40.00-41.00*

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

THE NEW LOGEMANN MODEL 500-PF HIGH SPEED SCRAP PRESS

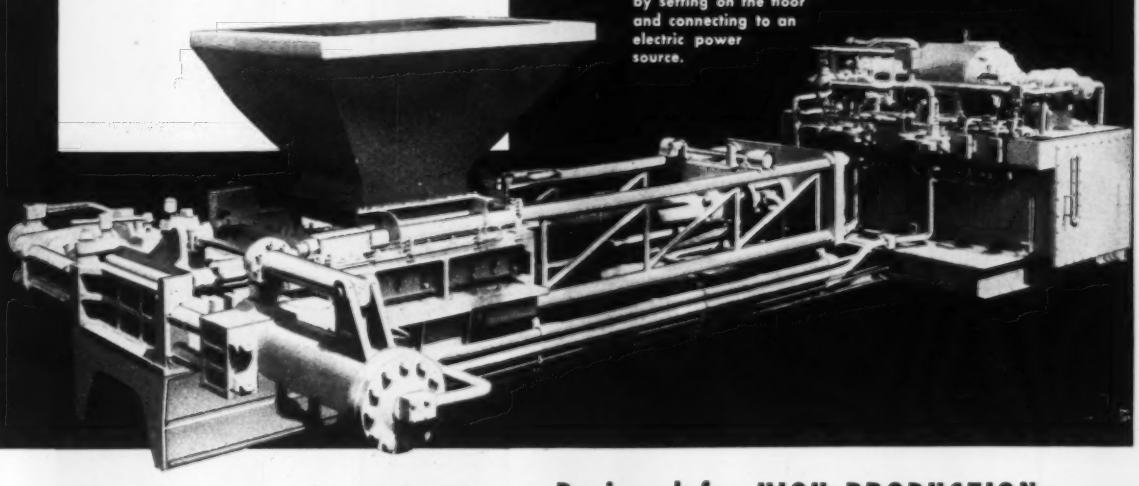
FAST LOADING! FAST BALING! FAST DISCHARGE!

Here is a two-compression, side-ejection press designed for high production — up to 240 bales per hour.

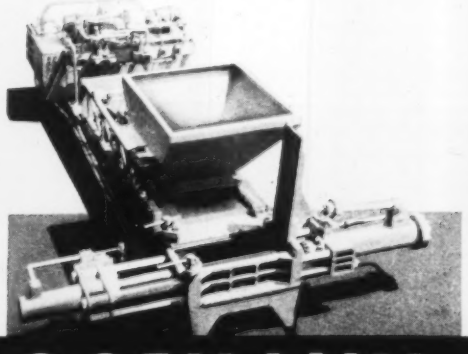
It is able to bale sheet clips, stamping skeletons, wire, cans, steel, copper, brass and aluminum scrap.

The LOGEMANN Model 500-PF press is a high-speed, high-density horizontal two compression unit. It is filled from a hopper supermounted above the compression box and discharges the compressed bale through a side opening. The operating cycle is automatic and continuous, or manual at the option of the operator.

No pit required for installation. Can be operated by setting on the floor and connecting to an electric power source.



BALE SIZE	6" x 12" x 8" (VARIABLE)
BALE WEIGHT	40 LBS. AVERAGE
PRODUCTION	UP TO 240 BALES PER HOUR



Designed for HIGH PRODUCTION

Here is a new high speed scrap press . . . geared for high production and extra baling profits for you. Famous "engineered" features, proved through actual operation, are built into this press to give you constant, uninterrupted service. It's a top-loading side-ejection press that can handle a variety of scrap. Write for the new Bulletin No. 220; it will give you complete information concerning design, pumping unit, valve assembly and accessory equipment. When making your inquiries please state the nature of your scrap and the tonnage desired.

LOGEMANN BROTHERS CO.

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What Minerals Bills Mean

Approval of Seaton Bill would strengthen copper prices, weaken lead and zinc. Barter program would have bullish influence. Prices should hold if bills fail to pass

Nonferrous Metal Prices, Pages 156 & 157

WHETHER a meaningful Minerals Stabilization Bill comes out of this session of Congress is still in doubt, but the nonferrous industry's reaction to its passage or defeat can be predicted with some certainty.

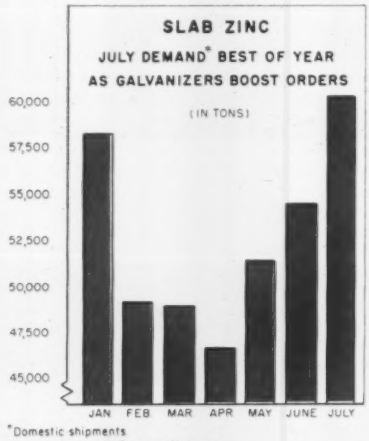
If the bill passes (along with appropriation authority) look for: Copper to go up, probably to 27.5 cents a pound, since the 150,000 ton stockpile provision will have a bullish effect on the market. Lead and zinc could see a price decline. Reasons: 1. It's expected that the bill would stimulate greater production, throwing supply and demand farther out of balance. 2. Domestic producers might lower present quotations to hold down imports.

Failure of the bill to pass would probably have little effect on present prices. The copper, lead, and zinc markets have all improved somewhat since the legislation was introduced — probably enough to maintain the status quo. Some sources believe a negative vote might even lay the groundwork for an eventual strengthening in lead and zinc prices since it would force more production cutbacks.

Chances—Everyone in Congress has opinions, but there's no clear indication as to whether the bill will pass or fail. Supporters concur that if the bill gets out of the House Rules Committee, there's a fair chance a workable compromise will come out of this session. The big hitch would come in getting money to finance the measure. The consensus on Capitol Hill is it's too late to put through a separate appropriation bill. But one mine state legislator predicts this move if the bill gets to a House-Senate conference.

Barter—The most bullish proposal on the legislative horizon would be reactivation of the barter program as proposed by the House (see STEEL, Aug. 4, p. 144). Passage would surely mean higher lead and zinc prices. Two reasons: 1. Excess metal would be siphoned off the world market. 2. Domestic producers would be able to ship metal made from foreign origin ores to stockpile.

The fate of barter rests largely with an upcoming House-Senate conference. The conference has so far been delayed by some behind-the-scenes horsetrading, but proponents are hopeful differences can be ironed out and a compromise agreement reached before adjournment.



*Domestic shipments
Source: American Zinc Institute, Inc.

Sentiment—The Minerals Bill has few ardent supporters in the nonferrous industry. Some favor it as the best thing the mining industry can get right now; others oppose the measure as merely prolonging the adjustment to a supply-demand balance.

An expanded barter program is looked on with favor by most lead and zinc companies. But again there are some who would rather sell themselves out of the recession and "keep the government out of the metals business."

Metals Roundup

A pickup in sales since the spring months is one reason many metalmen now are lukewarm toward minerals legislation.

Copper—Primary copper had a good month in June. July was better than expected, and August sales are going along well. Custom smelters say they are doing a "satisfactory" business at the 26.5 cent a pound figure.

Zinc—July domestic shipments of slab zinc racked up their biggest total of the year (see chart). Total shipments (includes export and drawback) of 60,187 tons were exceeded only by January's 68,657 tons. But almost 10,000 tons of the January figure went to stockpile while none did in July. Production fell to 65,119 tons, but this wasn't enough to keep stocks from jumping 5000 tons to 257,911 tons. Galvanizing continues to be the mainstay of the zinc market.

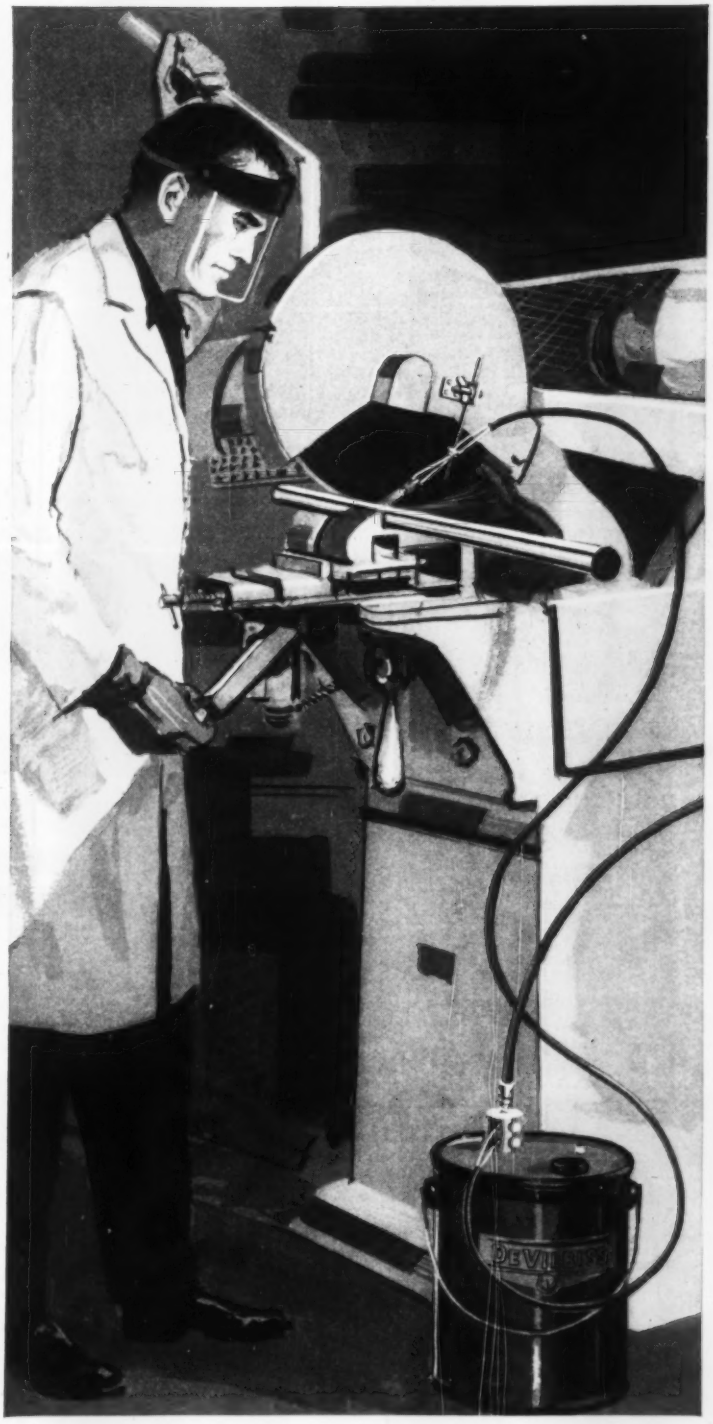
Lead—Late last Wednesday, Aug. 13, lead producers reduced their price by 0.25 cent a pound to 10.75 cents, New York. Observers pointed to weaker sales, a drop in the London quotation, and possible build-up of concentrates as reasons.

NONFERROUS PRICE RECORD

	Aug. 13 Price	Last Change	Previous Price	July Avg	June Avg	Aug., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.000	24.000	28.100
Copper	27.00	Aug. 6, 1958	26.50–27.00	26.125	25.400	28.639
Lead	10.55	Aug. 13, 1958	10.80	10.800	11.040	13.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.75	Aug. 13, 1958	95.125	94.950	94.701	94.259
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

MULTI-MISTER INCREASES CUT-OFF WHEEL LIFE 40%



TEST:

Conducted by A. P. deSanno & Son, Inc., Phoenixville, Pennsylvania, on RADIAC type "C" machine, equipped with a 7½-hp, 3600 rpm motor, operating a wheel spindle at 5000 rpm. Two resinoid-bonded abrasive cutting-off wheels—each 11 9/16" in diameter and approximately .097" thick—were used to make 18 cuts apiece through a 1" cold-rolled steel bar. One wheel was used dry, the other was cooled by a DeVilbiss Multi-Mister.

RESULTS:

The 18 cuts wore the diameter of the dry wheel 7/16". The wheel spray-cooled by Multi-Mister wore only 5/16"—a 1/8" difference in wear, or 40% greater wheel life.

A DeVilbiss Multi-Mister can also increase the life of your forming and cutting tools. Multi-Mister directs a chilling blast of air and coolant to keep temperatures down two ways: (1) the jet of expanding air dissipates tool heat instantly, and (2) the mist lubricates cutting edges to reduce friction. Complete outfits start at $40; attach quickly and easily to any machine.

So call your DeVilbiss representative today for all the facts on mist cooling, plus a free demonstration of Multi-Mister on your own machines. Or write for Bulletin BC 1025.

FOR BETTER SERVICE, BUY

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60, 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex.; in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.
Cadmium: Sticks and bars, $1.55 per lb deld.
Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.55; chemical, 10.65; corroding, 10.65, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-243 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 94.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.00-25.25; No. 12 foundry alloy (No. 2 grade), 21.75; 5% silicon alloy, 0.60 Cu max., 24.75; 13 alloy 0.60 Cu max., 24.75; 195 alloy, 24.75-26.00; 108 alloy, 22.25. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.00; grade 2, 21.75; grade 3, 20.50; grade 4, 17.75.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $15.50 per cwt; pipe, full coils, $15.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6063-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70-60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 20.00-20.50; No. 2 heavy copper and wire, 18.25-18.75; light copper, 16.25-16.75; No. 1 composition red brass, 16.50-17.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	29.28d	44.11	46.48	17.000	16.750	15.250
Low brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

positions turnings, 15.50-16.00; new brass clippings, 14.00-14.50; light brass, 9.75-10.25; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.00-12.50; auto radiators, unsweated, 13.50-14.00; cocks and faucets, 13.50-14.00; brass pipe, 13.50-14.00.

Lead: Heavy, 7.25-7.75; battery plates, 2.75-3.00; linotype and stereotype, 9.25-9.75; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 12.25-13.25; mixed high copper clips, 14.50-15.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.50-15.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5 % Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.25; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.25; No. 2 heavy copper and wire, 21.25; light copper, 19.00; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.

Copper: Flat-rolled, 43.29; oval, 41.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb., 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): 25 lb, 150.70; 100 lb, 145.90; 400 lb, 143.40; 800-19,900 lb, 102.60; 20,000 lb or more, 96.50.

Stannous Sulphate: Less than 50 lb, 136.10; 50 lb, 106.10; 100-1900 lb, 104.10; 2000 lb or more, 102.10.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 151)

will be higher prices this fall. Based on mill buying, prices have not changed since June. The Houston mill has contracted for a limited tonnage of No. 2 heavy melting, crushed turnings and Prolerized steel (STEEL, May 19, p. 91). The other Texas mill remains out of the market.

No new export buying has been reported. One cargo, already in hand, will be shipped from the Gulf this month. Mexican mills have offered to buy scrap through yards at Laredo and Eagle Pass. The Laredo price is $36.90 a gross ton for No. 1 heavy melting; at Eagle Pass it is $32.90.

The southwest cast market continues strong with East Texas foundries setting the buying pace. Supply of cast is tight.

San Francisco—Dealers believe it will take a hefty, sustained boost in steel mill operations or a sharp revival in exports to stir the steel scrap market out of its present lethargy.

Seattle—Nothing has developed to strengthen the scrap market in this area. Some dealers are inclined to write off the entire year as they see no improvement for the balance of '58. Sales are at a minimum; receipts are light; prices are nominal. Mill consumption is below normal and inventories are ample.

The export market here is at a

UNUSUAL OFFERING

MODERN OVERHEAD CRANES

CAN BE INSPECTED IN OPERATION

Capacity	Name	Span	Lift
50 Ton (2-25 T. Trolleys)	Shepard Niles	100′ 6″	25′
75 Ton	N. B. P.	75′	40′
150 Ton (2-75 T. Trolleys)	Shepard Niles	100′	39′
20 Ton (2-10 T. Trolleys)	Shaw	96′	27′
2-20 Ton (2-10 T. Trolleys)	N. B. P.	71′ 10″	25′ 6″

All Cranes 230 Volts DC

EXCELLENT CONDITION—PURCHASED IN 1945

HERMAN H. SCHWARTZ CO.

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CLASSIFIED

Help Wanted

FORGE SHOP SUPERINTENDENT
DIE ROOM FOREMAN
PLANT ENGINEER
METALLURGIST

for successful New York State manufacturer of drop and upset forgings. Must have experience. Write giving complete resume, place of employment, phone number, salary, etc. Address Box 684, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Manufacture of pipe fittings for power plant and oil refinery usage. Know equipment and methods; able to plan and direct entire operation; recommend process, equipment, and methods changes; train personnel; control quantity, quality, and costs of production.

Good opportunity to advance with well-established reputable firm. Starting salary in accord with present qualifications; increases in accord with progress made; bonus and fringe benefits added.

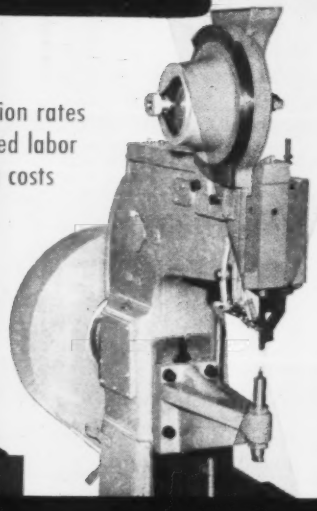
Relocation costs paid; placement fee a negotiable item.

Replies absolutely confidential; our employees know of this opening. Please forward information relative to experience, abilities, education, and salary requirements.

Reply Box 683, STEEL
Penton Bldg. Cleveland 13, Ohio

Odd shapes are no problem for the new Townsend Model 75 Tubular Rivet Setting Machine

High production rates using unskilled labor cut fastening costs



Skillfully designed tooling gives complete versatility to the new Townsend Model 75 Tubular Rivet Setting Machine. A variety of specialized tooling is available to equip the Townsend machines for any size and shape of work.

Townsend tubular rivets are available in steel, aluminum, copper, brass, nickel-silver and special materials for use in joining anything from cloth to steel sheets. Thus, Townsend makes available the economies of tubular rivet fastening for a wide range of products in a number of different materials. Townsend's experienced fastening engineers provide application design service.

If you wish to enjoy the economies of fastening with tubular rivets, write for complete information on the versatile Model 75 Setting Machine and the complete line of Townsend tubular rivets. Townsend Company, P. O. Box 237-C, New Brighton, Pa.

The Fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

In Canada: *Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario*

standstill. Japan is buying sparingly, reflecting a rapid decline in shipbuilding in that country. California exporters report chartering a full cargo tramp, September loading, discharge in Japan, at $60,000 freight, free load and discharge. This low rate reflects the current distressed position of world shipping.

Refractories . . .

Refractories Prices, Page 147

General Refractories Co., Philadelphia, has increased prices about 4 per cent on some of its refractory products, effective Aug. 15. Included in the increases were clay and silica brick.

Lower Scrap Freight Wins

Railroads in the Southwestern Territory have accepted the Institute of Scrap Iron & Steel's proposed compromise increase on freight rates for scrap of 3 per cent, maximum 40 cents a ton, in place of the flat 40 cents per ton increase granted in February by the Interstate Commerce Commission.

The institute has already been successful in persuading Western Trunk Line roads and the roads in the Southern Territory to accept the freight compromise. The Chicago & North Western Railroad, the Milwaukee Road and the Burlington have all given statutory notice that the compromise becomes effective Sept. 10.

The institute has also been successful in having the 40-cent increase cut back in Michigan and Indiana, while in West Virginia the railroads withdrew their request after the institute made its appeal to the Public Utilities Commission.

In its argument, the institute takes the stand that the flat 40-cent increase penalized the scrap industry more than other industries, and that it was so steep scrap traffic would be driven from the railroads to truck and barge lines.

Scrap represents a major source of freight revenue for the railroads. According to ICC figures, the carriers had revenue of over $100 million from hauling scrap in 1957. The railroads also receive substantial sums each year from the sale of scrap which arises in the course of their operation.

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there's so much to choose from at...

HOTEL CLEVELAND

Cleveland Room

Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

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One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

Rib Room

A true specialty restaurant
For Fabulous Roast Beef, roasted, carved and served to your order.

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Strictly stag — is this all male haven for good drinks, good food and good talk. Plus sports events on TV.

TRANSIT BAR

For *rapid* service in the most unique bar in the country . . decorated with an outstanding collection of miniature trains.

the PATIO

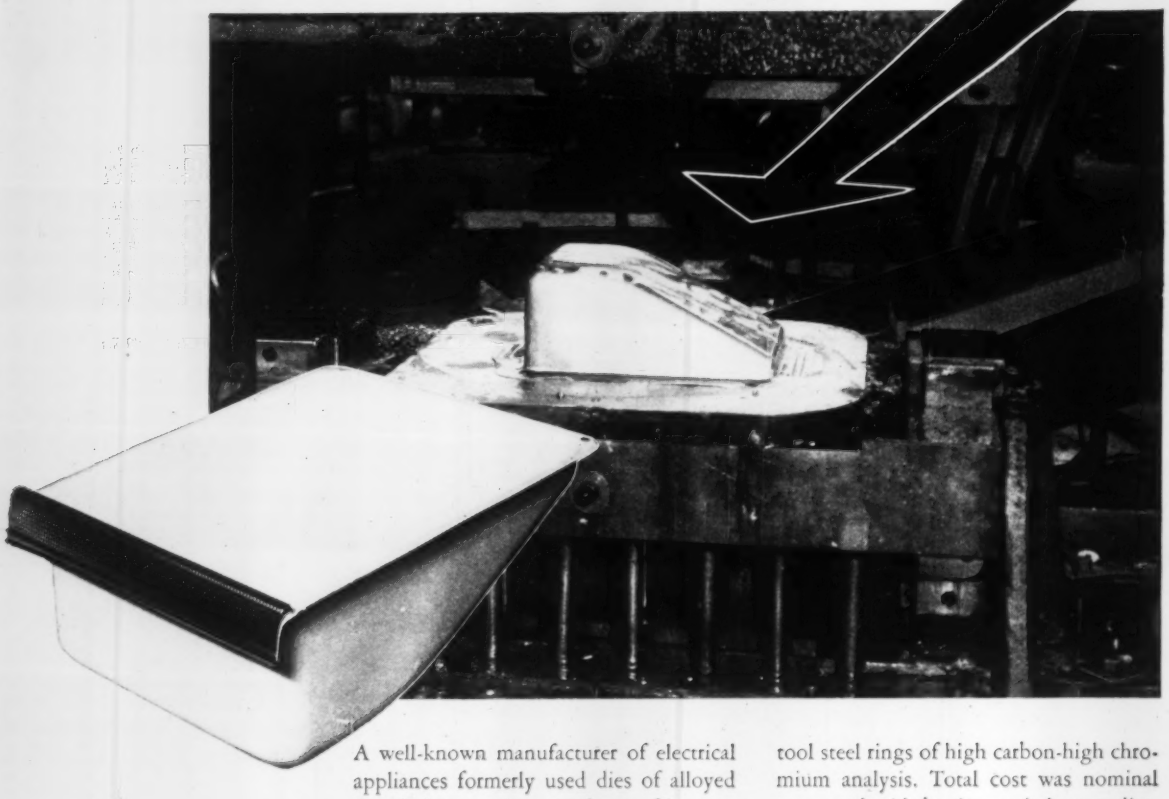
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

Coffee Shop

Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

HCA Hotel Cleveland
CLEVELAND, OHIO

Here's how A-L CAST-TO-SHAPE TOOL STEELS solved a serious scrap problem on this job



A well-known manufacturer of electrical appliances formerly used dies of alloyed ductile iron castings to draw refrigerator crisper pans.

These dies had to be redressed after every 10,000 pieces (approximate cost: $1300 each) and had to be replaced after every 30,000 pieces. 8 to 10% of the pans were scrapped due to defects.

Because of this scrap problem and the severity of the draw—a 52% reduction of the steel—it was decided to rebuild the dies using a suitable grade of tool steel.

A 2" cut was taken off the top of the old cavity and the draw ring. These cuts were replaced with A-L Cast-to-Shape tool steel rings of high carbon-high chromium analysis. Total cost was nominal compared with buying entirely new dies.

Each of the revised dies has produced approximately 500,000 pans. Their condition indicates that probably *twice* that many can be drawn before the dies must be redressed. Defective pieces have been reduced to a mere 1½ to 2%—*an 80% reduction!*

● Ask your A-L representative TODAY how Cast-to-Shape tool steel can help solve your production problems . . . or write *Allegheny Ludlum Steel Corporation, Forging and Casting Division, Detroit 20, Mich.*

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Farval spray lubrication system keeps A-C ball mill running smoothly

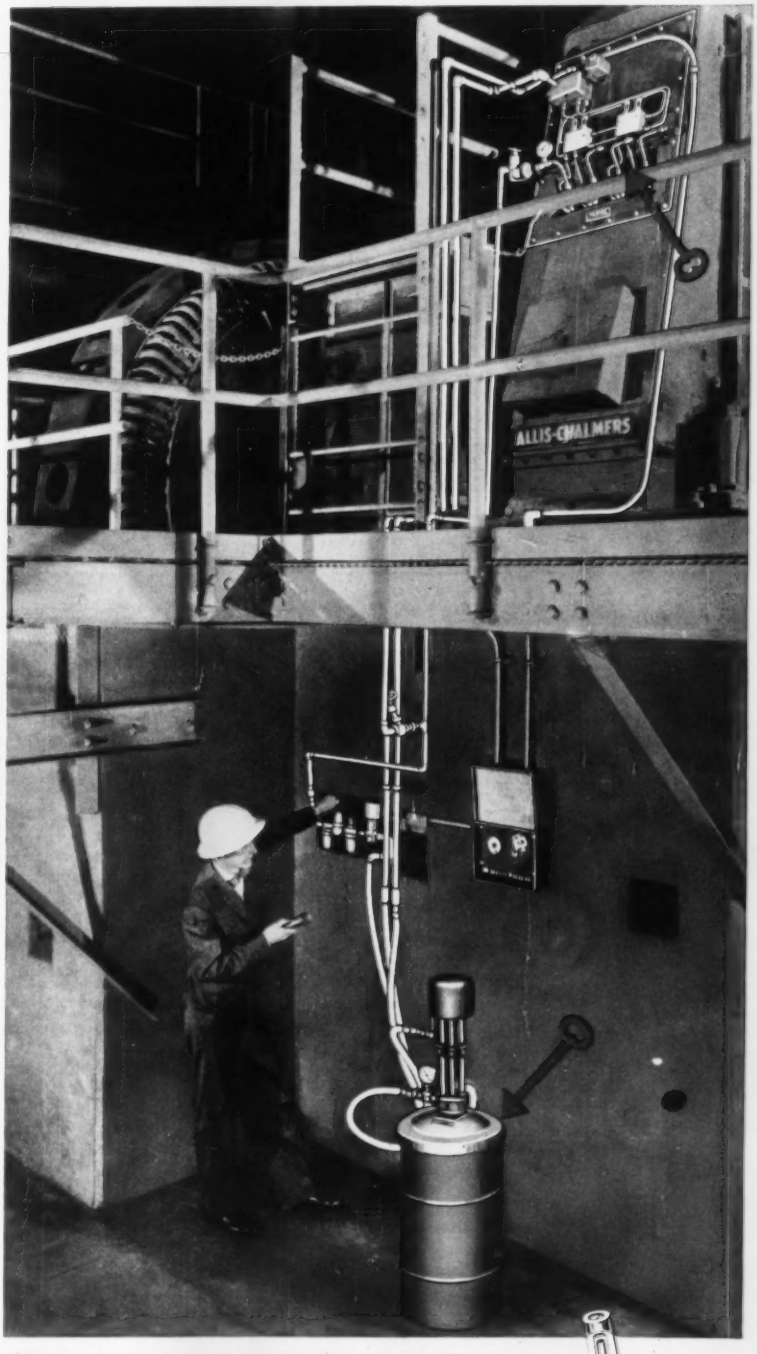
Inspecting the new installation of a Farval spray lubrication system on an Allis-Chalmers ball mill at Marquette Cement Company's Milwaukee plant is Erv Klovers, project engineer at Allis-Chalmers.

Mr. Klovers' task was to find an economical and dependable lubrication system to guard the large diameter, wide-faced gears that power the ball mill. So he contacted Farval and together we designed the original spray lubrication system for ball mill gearing. It was completely flexible in arrangement and position—fit his requirements to the letter—showed savings in both lubricant and labor costs.

With Farval, gears can be sprayed with the proper lubricant in any amount specified, as often as necessary—without waste or mess.

Hooked up to existing compressed air sources, Farval Spray Valves deliver the lubricant to tooth surfaces through controlled air delivery. Large porting in Farval Dualine valves ensure correct lubricant supply with minimum pressure-drop and very minimum grease separation.

This simple, inexpensive but thorough lubrication system can help you cut maintenance costs as it has for hundreds of others across the nation. See what a Farval system can do for you by asking for Bulletin 26-S. Write The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.



FARVAL—Studies in Centralized Lubrication No. 231

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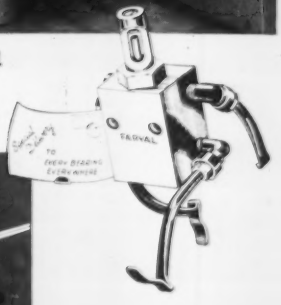

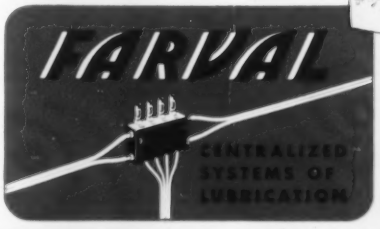

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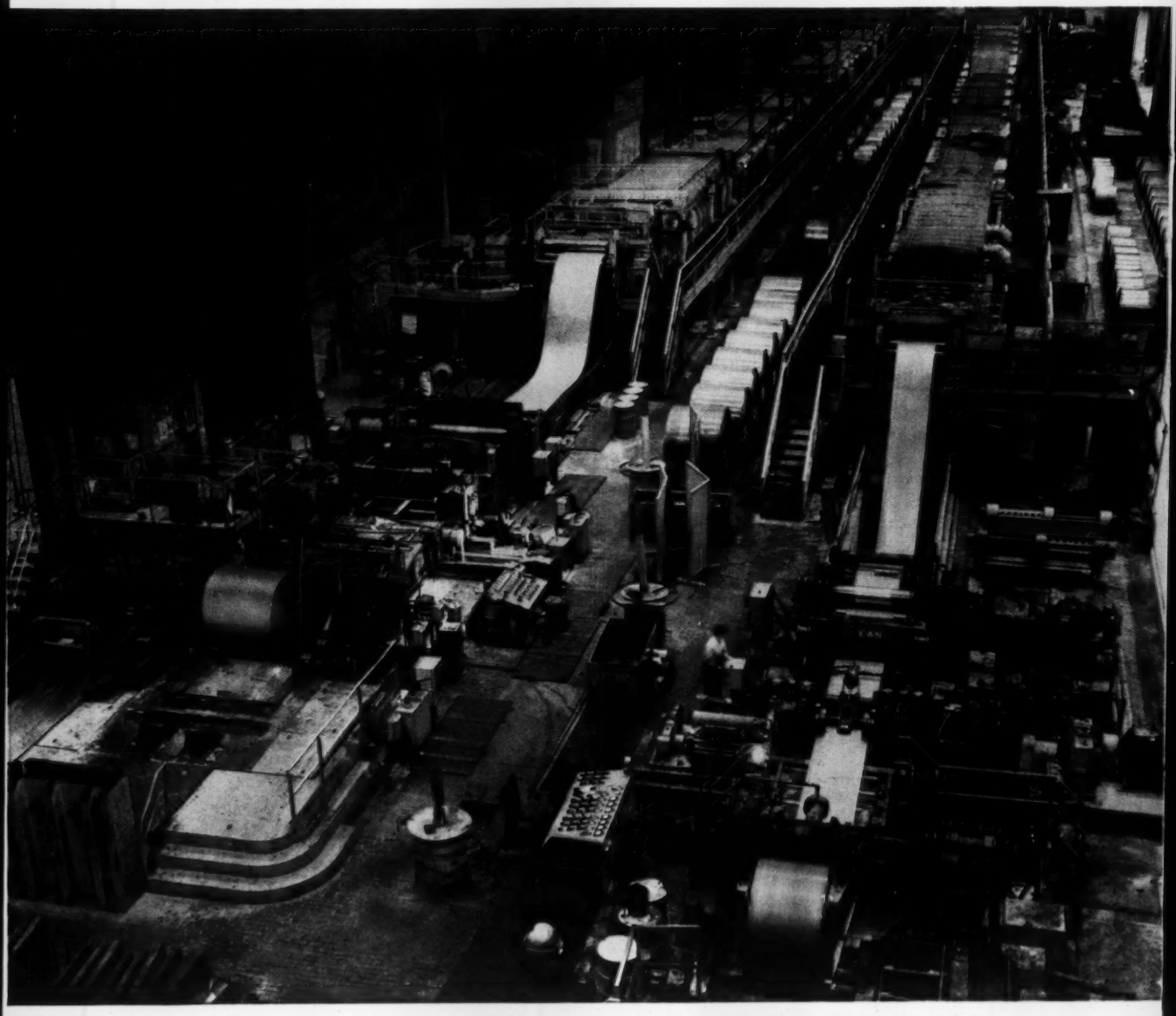

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